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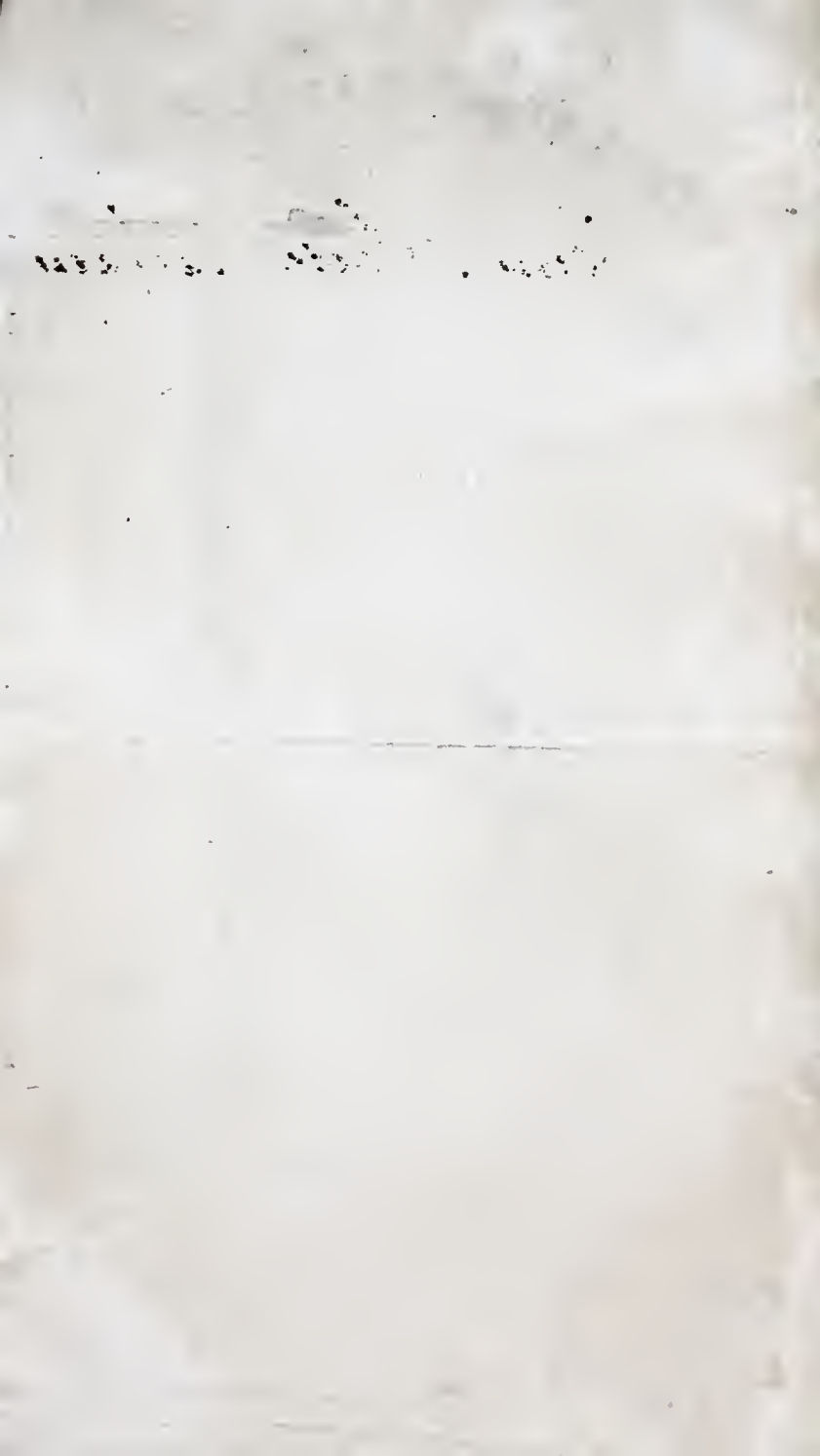
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VOLUME 1



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SKETCHES  
OF  
THE STATE OF THE USEFUL ARTS,  
AND OF  
SOCIETY, SCENERY, &c. &c.  
IN  
GREAT-BRITAIN, FRANCE AND HOLLAND.  
OR,  
THE PRACTICAL TOURIST.

IN TWO VOLUMES.

VOL. I.

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BY ZACHARIAH ALLEN.

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HARTFORD:  
BEACH AND BECKWITH.  
PROVIDENCE:  
A. S. BECKWITH AND COMPANY.

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1835.

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ANNUAL REPORT

1900

## PREFACE.

In the present state of society, so rapid is the progress of improvement, that new objects are presented to the notice of every successive traveller. No one, it has been observed, can succeed, by the most careful diligence, in gathering all the flowers by the way-side, leaving none to be gleaned by those who may follow his footsteps. Observations of every traveller receive their direction somewhat from the peculiarities of professional occupation and of individual character. The principal design of the writer of the following pages, in crossing the Atlantic, was to examine the effects of the important improvements in machinery upon the state of society at the present day.

Of late years, literary men have bestowed an increased attention upon subjects connected with the application of science to the useful arts. Both statesmen and philosophers have become benefactors to mankind, not only by enlarging the limits of human knowledge, but by contributing to disseminate in popular forms the discoveries already made in science. The philosophers of ancient times loved to indulge in theoretical dogmas and profitless speculations; but those of modern times seem to feel pride, as well as pleasure, in pursuing scientific investigation, for the purpose of promoting useful results.

The knowledge of the useful arts, now cultivated as a branch of public instruction, is not unfrequently to be gained either by entering apartments filled with the smoke of furnaces, and resounding with the deafening noise of

machinery, or by conversing with men devoted to the common handicraft labors of life. European travellers have commonly preferred to breathe the pure air of a beautiful country, where the works of a munificent Creator are offered for contemplation and enjoyment; or to indulge exclusively in the pleasures afforded to taste and intellect, by the examination of splendid buildings, paintings, statues and libraries.

Although the principal design of the following pages is to record useful facts, yet, in accommodation to the taste of general readers, sketches of scenery, habits and manners, have been introduced to vary and enliven the subjects of remark. The castle and the abbey, the theatre and the gaming house, the cottage and the palace, as well as the "work shops of Europe," have all, in turn, been visited by "the Practical Tourist," in his circuitous rambles over some of the most interesting countries of Europe.

Manchester, as the great focus in which human industry has been more wonderfully developed than in any modern city, affords an interesting subject for contemplation to the scholar and political economist, as well as to the manufacturer and practical mechanic. That town exhibits those progressive improvements, and that almost marvellous skill in the use of machinery, which have advanced individuals to the wealth of princes, and rendered a nation the arbiter of the destinies of the world.

As the following pages embrace other topics than those of transient interest, and as they embody the latest statistical information, they will lose no interest from the delay\* which has taken place in offering them to the public.

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\*The tour during which these notes were taken, was made in the year 1825. A few of the following sketches may already have met the eye, as they were handed to the editor of a public journal at his request, to be inserted in his columns.

Wherever opportunities have permitted, allusion has been made to the comparative state of the arts, mines, scenery, &c. in the United States. Comparative estimates have also been made to illustrate some of the relative natural and artificial advantages and resources of wealth possessed by the inhabitants of England, France, Holland, and the United States. The American reader will thus have presented before him sketches of his own country, as well as of some of the most highly improved countries of Europe.

In the midst of importunate cares, and in the hurried pursuits of business, the notes of the "Practical Tourist" have been prepared for publication, with the sincere desire that they may, to some readers at least, be found useful.





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## PRactical TOURIST.

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### VOYAGE.

The packet ships, established to form regular lines of communication between New-York and Liverpool, sail on stated days ; and even the hour of departure on each day is designated. If the wind prove favorable, they put to sea with as much punctuality as is usually observable in the departure of steamboats on inland bays or rivers. Like the steamboats, too, these packets are not detained for those passengers who may delay making their appearance on the wharf, until after the prescribed hour has passed. The small steamboat, which plies between Staten Island and the city, is frequently employed to transport the passengers to the ships ; which, for convenience getting out of the port, are removed to the usual anchorage ground in the bay, previously to the time fixed on for sailing. Upon the deck are arranged trunks, boxes, and coops for the ducks and chickens destined for the supply of the table during the voyage. At the pealing sound of the steamboat bell, re-echoed in sharp notes from the walls of the adjacent buildings, persons are to be seen hurrying forward with quickened pace to drop letters and packages of newspapers into large sacks or letter bags, each of the capacity of several bushels, arranged with their mouths gaping open, as if ready with unsated appetite to swallow the last scraps of news gleaned from the shores

of the new world, to be wafted across the ocean to those of the old world. Seven or eight thousand letters, besides newspapers, have in some instances, it is stated, been transported in one packet ship, as a portion of the weekly interchange of written communications between the inhabitants of the opposite shores of the Atlantic.

In a few moments after the clock struck ten, the boat shot forth into the stream, leaving the spectators recoiled to the verge of the wharf, where they remained in dense ranks for a short time stationary, fixed to the spot whilst intently gazing at the rapidly receding steamboat; thus rendering that silent tribute of admiration, which the appearance of this most splendid invention of man, proudly dashing forward in its course over the waters, never fails to elicit from the most hurried and careless observer.

When the boat ranged along side the packet ship, her sails half unfurled were flapping in the wind; as if, like some sea bird with snowy pinions, she were detained and held fluttering by a cord, restless at delay, and impatient to wing her way toward the broad ocean. The voice of the mate is now heard in sharp tones, louder than the noise of the steam escaping in a continued hoarse guttural roar through the safety valve. A ready and active crew apply the levers or handspikes to the windlass, around which the cable is wound, and upon the successive notches of which the regularly dropping pall falls with a clicking, measured cadence, holding fast the unrecoiling barrel, and thus preventing the return of the suspended anchor to its oozy bed. The flukes, dripping with mud recently torn up from the bottom of the channel, now emerge above the surface of the water. On the masts aloft, all the higher sails, one after another, are loosened from their compacted folds, and fall successively from the yards in broadly expanded sheets. The wrinkles disappear when the breeze silently distends the flagging sheets to the rotund form of the stom-



ach of some portly Alderman, from which fancied resemblance the poet's imagination was probably inspired to wed the term "bellying canvass" to immortal verse. The noise of the foaming water, dashed aside before the bow of the ship, is now distinctly to be heard, as she gallantly sallies forth from between capes and headlands, leaving the smooth quiet waters of the bay, and plunging into the orderly arranged surges of the ocean. The great ridges of water move onward, at regular distances asunder, in long and apparently interminable succession, with all the little waves spread over their backs in petty undulations. On meeting the first big wave, the ship seems to recognise it as an old acquaintance, by familiarly nodding and bowing its tall masts.

Excited by the novelty of the situation, I seated myself on the deck, and continued to look abroad with curiosity, now at the masses of tumbling water near at hand, crested with foam around the vessel, and then at the smooth never varying even line of the horizon, bounding the view of the distant prospects. Tracing this line, where the sky and sea appear to meet, the anxious eye becomes intently fixed at last in watching the few dim summits of the hills that appear swimming on the verge of the blue sea. When the aspiring summits of the highlands gradually disappear, one after another, as if mingling with the clouds and waters, emotions steal upon the heart which impart a peculiar charm and interest even to the sight of our native land. The dilated pupil is strained to catch a glimpse of its fading outlines, as if each look were to prove the last. Thus, our affections become expanded, as the distance that separates us from our country increases, until we experience almost as powerful a gush of emotions on parting with its very shores, as we may have previously experienced on parting with our friends who dwell beyond them. Indeed, one now realizes the full force of Byron's "Farewell,"

and almost involuntarily exclaims in his fervent words, "my native land, good night." A few dim specks, which only the practised eye of the sailor recognises as distant sails, are after a few hours discernible at remote distances. With the fading of these objects seems to be connected the waning of the animal spirits, when seasickness renders a retreat necessary to the little state room. Here, after musing on the pleasant fields of the country and the domestic fireside of the city, one begins to wonder that any man, possessing a comfortable home on the land, should ever be found willing to exchange it for a "home on the deep."

There are few occurrences to vary the monotony of a voyage across the Atlantic. The regular chimes of the watch bell, passing off over the expanse of water without a returning echo, give the signal, precisely at stated intervals, of the changes of the watch upon deck, and also of the lapse of time. The creaking, and cracking of every yielding joint of the writhing frame of the ship, and of the partitions forming the state rooms of the cabin, are perpetually renewed at every heaving movement of the floating fabric, as it mounts over the summit of each rolling wave. The tramp of the sailors on the deck, and their shrill cries to produce a simultaneous exertion of their strength in pulling the ropes for trimming the sails; the splash of the waters against the planked sides of the ship; the occasional whistling and howling of the tempest through the blocks and mass of cordage; all serve, in turn, to remind the passenger at sea that he is in truth a wanderer on a stormy way. I had no fellow-passenger to commune with, and to cheer the tedious hours by the pleasures of social intercourse;—the source of the principal if not the only pleasure to be enjoyed whilst thus separated from the busy world. Shut up a prisoner on a boundless plain, I strolled over the silent cabins and state-rooms, which re-echoed to my



solitary footsteps, producing dreary sensations of loneliness. For two weeks, that disheartening malady, sea-sickness, rendered my berth a desirable retreat. Whilst lying there upon my back, I had ample leisure to form the conclusion, that a regular settled fever on shore in a comfortable, immovable, quiet chamber, might be preferable to the malady of sea-sickness of a fortnight's duration, aggravated at the same time by the agitation of the lurches of a tempest-tost ship. A walk of five hundred miles on solid earth appeared to be a trifling enterprise, had it been practicable to have set foot again upon the continent of America, for the purpose of winning my way back to the place from whence I had started. Regrets proving useless, the restless passenger, tired of his narrow bed, where he is hemmed in by boards as if couched and stifled in a wooden trough, resorts to the deck to breathe the fresh air. Having imbibed there renewed sickness from every tossing wave, he is compelled to retreat again to his berth, where time flies with leaden wings. For many successive days I watched the coursing drops of water, that oozed through an opening in one of the circular joints of the convex glass lens, inserted in the deck nearly above my head, to admit light into the little state-room. These drops, moving over the disk of the glass at every roll of the ship, appeared to be playing and dodging with each other in sportive gambols. They attracted my eye at the dawn of light, and moved before my vacant gaze until the twilight rendered them indistinctly visible. After becoming convalescent, and acquiring sufficient steadiness of hand, and firmness of heart, to stand erect before a mirror, to perform in the accustomed way the usual operation upon the beard, I was actually startled at the reflection of my emaciated countenance, and almost doubted the fidelity of the polished surface of the silvered glass, which disclosed to view, wrinkles and shadowy lines where none had appeared before. Like

Sosie in Moliere's *Amphytrion*, I was almost on the point of doubting my own identity, and asking myself aloud "is it I," in the half dreaming supposition that some foreign chin had been intruded over my shoulder.

Whilst a ship is passing at sea under full sail, every one pauses, and feels a temporary excitement to gain a distinct view of the spars and hull, half veiled, and blended in the haze of distance. On approaching the desired coast, a much more intense interest is felt to gain a first glimpse of the hills that emerge like the broken edges of a vapoury cloud from behind the far distant verge of the ocean. An Anglo-American, on approaching for the first time the shores of England, is commonly influenced by strong and peculiar emotions. However warped his opinions may have been by prejudices of a political nature, still an American cannot but feel at such a moment, that it is the land whence he derived his language, and his descent; the land whence the bright examples of good men have gleamed as shining lights over the distant shores of America, and from whence science has diffused abroad the blessings of intelligence, of improvements in the arts of life, and in the refinements of civilization; a land, indeed, with which he is intimately familiar from the legends that have amused his earliest childhood, and the literature that has solaced his riper age. Although the American may expect to meet no friendly welcome on the English strand, yet still he continues to look at the green hills, like some disinherited heir revisiting his paternal domains after they are transferred to the possession of strangers. He may imagine that he views perhaps the very fields once tilled by the hands of his forefathers, or the walls that spread around them a hospitable shelter. Such, at all events, were my sensations on first beholding the shores of England. The herbage of the English meadows and pastures is rarely changed to a russet shade by the frosts of winter or the droughts of

summer ; - but continues to retain its verdure throughout the year. The most refreshing landscapes are thus presented to relieve the eye, fatigued with viewing for several weeks the unvaried prospect of the uniform expanse of the ocean. On the morning of the twenty-fourth day after our departure from New-York, the Emerald Isle appeared close at hand. In the evening, the gleaming lights of various light-houses, sprinkled along the headlands of the coast, served, like the stars to ancient mariners, to direct the course of the sailors.

In order to prevent the mistaking of one light for another, where so many are closely arranged together, one light-house pours forth across the water a flood of crimson coloured rays, tinged to a bloody hue by passing through the medium of stained glass. Another adjacent light is intermitting ; being entirely hid from sight during every other minute by a revolving screen, which, by means of clock work, is made to pass around the circuit of the lamps arranged within the great lantern, and to eclipse them like a dark planet intervening between a celestial luminary and the watchful observer on the earth.

The captain made a signal in the course of the night for a pilot, by letting off some rockets, one of which, mis-directed by accident, turned in its course, and plunged with its fiery tail directly into the crest of a green wave ; as if in an uncongenial element, dolphin-like, it moved on bubbling and hissing, until it leaped again from the succeeding hollow, and sparkled on the surface of the dark waters.

After a short interval, the rushing sound of a vessel sweeping past us in the dark was heard, and then the splash of a descending boat, and of the measured strokes of oars. A pilot was soon transferred to the deck of the ship. The pilot boats are constructed like strong sloops, to withstand the storms of the boisterous Irish sea, where they remain hovering around the headlands. They are manned by

crews of associated pilots, who put one of their companions on board each inward bound ship, and receive from each outward bound ship those who may have performed their duty in navigating her past the dangerous rocks and shoals. There is a regular system of rotation adopted among the pilots, to ensure a fair distribution of the profits.

The arrival of the pilot is always an important event on shipboard ; on stepping upon the deck, he assumes instant command of the crew, and the captain surrenders to him the management of the vessel, after having conducted it thus far to the intricate shoals at the entrance of the port of Liverpool. Without the delay of a compliment, or saying to the captain, by your leave, sir, the sound of his voice is heard in imperative tones directing the crew to trim the sails, and to steer the proper courses.

The coasts of Wales, along which we sailed in proximity with the shore, are lined with frowning bold rocks, which lift up their everlasting fronts high above the waves that dash against their base. The fields of the interior country exhibit the New-England scenery of stone fences. The summits of the distant mountains are still covered with the snowy mantle of winter. At intervals you pass through a long train of heavy smoke, emitted from the copper smelting furnaces in the isle of Anglesea, and wafted from the shores far over the waters. The peculiar sulphureous vapors arising from the copper smelting works are perceptible at a considerable distance from the coast. The copper ore even from Cornwall and other remote counties of England is transported to Wales to be smelted, the necessary fuel being very abundant in this district.

On approaching the entrance of the harbour of Liverpool, fleets of vessels are to be seen gathering thickly toward this focus of commerce. The particolored flags of various nations, streaming gaily from the numerous masts,



become mingled together, as in the great race of mercantile competition. Among the various styles of naval architecture observable, that of the Dutch galliots is the most remarkable for their peculiarly full round sterns, which are nearly as plump as the prow. The planked sides of the Dutch ships are nicely varnished over with bright semi-transparent resin, and the cabin windows and deck rails are gaudily painted with green, red, and yellow. The decks and cabins which I had an opportunity of examining in the port of Liverpool, appear free from every stain of dirt, as if each Dutch captain had his wife on board, and the wife of each Dutch captain were a model of nice housewifery. With all their attention to scrubbing and painting, the ships appear clumsy and heavy, like those portly belles whose exuberant forms all the trickery of gay ornaments can neither cover nor disguise. Their small masts and spars render them safe in storms; but this is forgotten when you regard them sailing side by side with beautiful American and English ships, and compare the apparently unwieldy fabric of the one, with the symmetry of the others. Whilst gazing at the canvass on the masts of the squadrons of smaller coasting vessels, you may almost imagine that their sails have been made by the labors of the tanner and currier, judging from their red or russet brown color, resembling the hue of leather freshly drawn from the tan vat. These sails, it is stated, have all actually passed through the hands of the tanner, who immerses them in a decoction of bark, for the purpose of saturating the fibres of hemp with the tannin, in order to render them less subject to mildew, which is very destructive in this misty climate. From its alleged peculiar quality of withstanding mildew, the cotton duck which is now in use in the United States would be admirably adapted to the moist atmosphere of England,

The entrance of the harbor of Liverpool is strewn with

banks of sand, which during the reflux of the tides are laid bare, and again in a few hours are covered with a sufficient depth of water for large ships to float safely over them. Should the incautious navigator suffer the keel to touch these hard sand banks, the rapidly subsiding tide will disclose to view the whole bottom of the vessel exposed upon the naked shoal; and the sailors may walk with dry feet around their ship, and watch the gradual opening of the strained and gaping seams, through which the next returning tide may gush in. The entrance of the river Mersey from the Irish sea is so landlocked, that the mariner, when surprised by a misty storm, with the wind blowing toward the shore, has no sea room, as it is termed, to allow of the free course of his vessel at large, or of lying to, without drifting into the funnel-shaped bay. Here, without safe anchorage, he is liable to be dashed upon the shores, even within a few miles of Liverpool. An experienced sea captain observed to me that he had seen the wreck of a ship, with the men clinging to the fragments, floating on the swift tide from the ocean through the very port of Liverpool, a spectacle for the whole population to look upon with feelings of commiseration.

At the point where the waters of the river Mersey are mingled with those of the sea, a mass of rocks is discernible, rising above the edge of the shore, three or four miles distant from the city of Liverpool. It was off this rock, as the captain of our packet ship stated, that an American privateer ventured during the late war, almost in sight of the inhabitants of the city; and endorsed on the log book of a vessel about to enter the port, a gasconading manifesto declaring Liverpool to be in a state of rigorous blockade. This was done in retaliation of the sweeping paper blockade of the ports of the United States by the British, when they actually employed on the American coast scarcely

one ship to blockade half a dozen seaports. The insurance from Liverpool to Dublin rose at that time three or four per cent in one day ; a circumstance, it is said, unknown in any former war. The general introduction of steamboats will deter the adventurous captains of small privateers from similar bold exploits in the narrow English seas.

At the very entrance of the river Mersey, the ship encountered a squall, the violence of which caused several of the overstrained blocks to be shivered to pieces, and to fall in showers of splintered wood upon the deck. The violence of the gusts induced the pilot to order the anchor to be dropped. But the winds and the waves, which had arrested the progress of our gallant ship, proved, however, no obstacle to the progress of a little steamboat, which triumphantly advanced toward us with its bow and sides bathed in snowy foam, created by its own moving force. Under such circumstances, one can appreciate the value of the invention, which has enabled the mariner to dispense with the aid of sails and to win his way even against the opposing force of the wind, the very element on which he before depended for a propelling power. The passenger, thus detained from his destined port, watches the approach of the steamboat with deep interest, and delights to contemplate its powerful movements, which have in a degree rendered man master of the turbulent elements. The letter bags with the solitary accompanying passenger were with difficulty transferred to the steamboat, drenched by a shower of spray ; and the steam which had for a few moments escaped from the safety valve with a noise louder than that of the tempest howling through the rigging above, and of the dashing waters below, suddenly ceased. Feeling as it were instinctively the impulse of life, the boat moved forward in its course toward the city of Liverpool.

On the summit of a hill, near the shore, numerous tel-

ographic signal poles are raised, intended to form a rapid communication with other far distant stations along the coast.

It is stated as an instance of the despatch with which intelligence may be conveyed from one individual to another at a remote distance by these telegraphic signals, which have been called the winged couriers of the air, that a communication has actually been made from Liverpool to Holyhead and an answer returned to Liverpool, a distance of 140 miles, in the period of 53 seconds.

The sea being at its lowest stage of ebb, I had an opportunity of noticing the surprising rise and fall of the tides of the Mersey. A dark stain of slime and ooze is left on both shores on a regular level line, nearly thirty feet above the humble surface of the tide at the lowest state of its depression. Proceeding toward the quays, you behold high above you massy walls, formed of blocks of stone, which are laid, course above course, until they seem to tower from the edge of the river aloft in the air like the walls of a fortress, laid bare to the view from the foundation stone of the moat, to the topmost stone of the battlement. To sustain the earth resting against walls of this great height, it may be well supposed that the masonry must be solid and massy. Those portions of the quays, at which there is sufficient depth of water for large vessels to lie afloat at the lowest stage of the tide, must have a still further foundation of piles and stones sunk several feet deeper below the surface of the river, making the total elevation of these portions of the walls of the quays nearly thirty-five feet. The deck of the ship, which floats on a level with the surface of the quay at high water, settles down so far below it when the tide subsides, that a tall ladder is required to ascend from the ship to the top of the pier. To discharge the cargo from a vessel thus situated would be nearly impracticable. Art has most successfully obviated this



natural disadvantage by the formation of great basins of water or ponds, inclosed from the river by a dike or embankment. Into these basins, or wet docks as they are called, the vessels are admitted at high water through a narrow channel of hewn stone, resembling a canal lock, which is also closed, in the same manner as canal locks, by large double gates. The gates open inwardly, yielding readily to the pressure of the intruding flood; but parsimoniously close, like a miser's purse, to permit no escape, when the ebbing tide retreats and leaves the banks of sand bare in front of the entrance. The docks are thus always kept full of water, and the vessels which float upon it are on a uniform convenient level with the quays upon which their cargoes are landed. The principal dock to which the American ships resort, forms a sheet of water of eleven or twelve acres of surface, which at times is so crowded with ships, that their closely arranged sides become nearly contiguous, and their decks form almost a floating bridge of planks, to cover it from sight. These docks serve also in a great degree to prevent successful smuggling, being inclosed, together with the ships that float upon them, by lofty brick walls and gates, at which custom-house officers are stationed to watch the egress and ingress of the crew, and also of the laborers who assist in unloading the cargoes.

The magnitude of the work of constructing a wet dock is apparent only when the water is entirely drawn off, and the low slimy bottom is disclosed to view, excavated to the depth of nearly thirty feet below the edge of the bordering quays, like an immense cellar, or some huge natural chasm, with the surrounding precipices faced with perpendicular walls.

In forming a dock, the first process is to excavate the earth from the shelving shore, and to throw it into the deeper parts of the adjacent channel, until the rising

mound appears above the surface of the river. As the work slowly advances, the extending arms of the mole are gradually brought to meet each other, and to encircle in their embrace a quiet sheet of water, from which the tide is excluded by the great gates. There are more than half a dozen of these wet docks which cover sixty or seventy acres of ground upon the shore of the Mersey, between the warehouses of the city and the channel. To facilitate landing on the wharves immediately from the river, at all stages of the tide, long flights of stone steps and inclined planes of solid masonry slope from the tops of some of the quays to the surface of the river when subsided to its lowest level, from whence it seems like ascending a considerable hill to gain the summit of the quay. Here, I found myself on English ground, and once more in the bustle of a crowd, and as it were restored to the busy scenes of life. Along the borders of the docks, numerous active laborers are to be seen, hoisting and lowering bales of merchandise on board of the ships; and all the necessary apparatus for facilitating the removal of goods appears prepared with studied care. Powerful cast iron cranes, capable of raising and suspending in the air the most ponderous articles transported in ships, are fixed on the pier heads; and drays and wagons of various models, adapted for receiving the most bulky and unwieldy merchandise, are ready at hand, attached to horses of gigantic size and strength. Even iron railways are laid across some parts of the wharves, for expediting the removal of heavy materials.

There are also several Dry Docks, intended, as the name implies, to be kept free of water, after the vessels are admitted into them for the purpose of undergoing repairs. The gates of the dry docks are constructed upon a plan the reverse of that of the wet docks, being calculated to open outwardly to allow of the free escape of water, but to close like valves to prevent the admission of it.

When the vessel is first floated in, the dock is of course for a time full of water, and like a wet dock ; but as soon as the tide subsides, the water retires, and the vessel is carefully sustained in an erect position, by shores or props, with her keel resting on blocks on the stone floor of the dock. So great is the fall of the tide, that the very keel is left bare, and the workmen can pass beneath it to execute any repairs which may be required. To render the descent into the dry dock more convenient to the workmen, the walls are formed of receding blocks of stone, which present the appearance of vast flights of steps, or stairs, on each side of the vessel. When the repairs are completed, it is only necessary to open the dock gates at low water, and to fasten them in their expanded condition to prevent their collapsing ; or to open a sluice gate at flood tide, when the dock becomes soon filled with water, and the buoyant vessel may be readily floated out. The gate of one of the principal docks, is 26 feet high, and 42 feet broad. When a full head of water rests against it, the pressure it sustains is nearly equal to that of a weight of 300 tons ! It may be readily supposed that where such a pressure is to be supported, the works must all be strongly constructed. One of the principal difficulties to be encountered in the construction of a large dry dock, arises from a source which is probably not thought of by most of the spectators, who stand idly on the brink of one of them, and look down into the cellar-like cavity, sunk above twenty feet below the surface of the flood tide, which laves the outer surface of the gate, as if exploring every chink to win admittance. The small streams insinuating through the porous soil, beneath the flooring of the dock, as through the water pipe of a hydrostatic press, cause the whole column of water to press upwards against the under surface of the floor with a force nearly equal to that of a weight of about 1300 pounds to each superficial square foot of its area. A dry

dock, whilst thus surrounded by water, and secured at every joint against the admission of the insinuating streams, resembles the hold of a vast ship. The upward pressure, or buoyancy, equal to that of several thousand tons, tends to upheave the flooring. To counteract the upward thrust or pressure, the flooring is not only held down by the ponderous masses of stone which rest upon it, but by numerous piles, to the heads of which it is firmly keyed in such a manner that the floor cannot be bulged upwards without drawing out the piles.

Great as have been the expenses of constructing the Liverpool docks, they are not unprofitable. The dock dues collected in a single year have amounted to about 1,000,000 dollars. The immense extent of the commerce of this city may be imagined, when merely the shipping charges for wharfage amount to so considerable a sum.

One of the principal canals from the interior of the country, terminates at a convenient distance from the docks; and ship loads of coal from the adjacent mines of Lancashire, and of salt, from the mines of Northwich and Nantwich, are always ready to be delivered at a few hours notice, thus furnishing a return freight to vessels from various parts of the world, to which these great staple articles are always found to be acceptable, when the more valuable freights of manufactured goods from Manchester, Leeds, or Staffordshire, are not readily offered to the ship-master. It is this circumstance of always finding in Liverpool a return cargo of salt, coal, or bulky crates of earthen ware, which warrants the masters of foreign freighting ships, in taking cargoes to be delivered at this port at the lowest rates; although the navigation is both more intricate and dangerous than to many other ports of England. To enlarge the facility of communication between Liverpool and the inland districts of England, a ship canal was once projected, to extend to Manchester; but this project has



been abandoned for that of a rail road. Who can, even in imagination, conceive to what future greatness the commercial and manufacturing enterprise of the people of England may advance their country, which has for ages taken the lead of all other nations in accomplishing the boldest works of art ! Possessed of the accumulated wealth, sufficient to accomplish every project that an untiring ardor for improvement is continually suggesting, no enterprise seems too bold to be attempted, provided only that a profitable return for investments of capital may be calculated upon as the result.

The baggage of passengers is taken from the ship to the custom-house for examination. Here, the traveller in England commences upon the system of fees, or gratuities, which continues to annoy him at every stage of his progress. Having, as I had supposed, no article in my trunks subject to duty, I felt no hesitation in exposing them to the most thorough examination. Unnecessary delays, it soon became apparent, were resorted to by the custom-house officer, when he found that no fees were tendered. His hands performed their functions as if they were benumbed, and he continued to draw one fresh cravat after another, with its struggling and resisting folds entangled in the mazes of surrounding linen, from the depths of each trunk to the broad glare of daylight. A small pocket bible of American print proved the only stumbling block, by which the progress of the examination was arrested. Finding that he had seized upon it, and that he was about to place it in the scales, to assess a duty on each ounce of its weight, and that he would probably consume the whole morning in continuing to search among the troubled apparel for some further prize, I slipped into his unoccupied hand a half crown. Instantly, his other hand was withdrawn from the depths of the portmanteau, to which it had again penetrated in an exploring expedit-

ion, with as much speed as if it had touched a torpedo concealed there; or rather as if one hand had known what the other had done. The suspicious bible, rescued from the scales, which were left empty to perform their vibrations in the thin air, was immediately replaced by him beneath the closing lid; and the lock snapped as the iron bolt was thrown into its place by the key applied in his now vigorously moving hand.. The electrical effect seemed to produce its most powerful action on the pliable joint of the hips, which unites the nether and the upper limbs. Throwing forward his body with a circular movement on this pivot, like the shutting blade on the handle of a pen-knife, he extended even his neck and head horizontally to form a right angle with his rigidly perpendicular legs. Whilst I was regarding with admiration the magical effect of the fee, and saw the hairy crown of his head pointed at me, and parallel with it an extended hand holding the key of the trunk, his voice reached my ears repeating in accents as soft as those a lover addresses to his mistress—"all is right." At the door I found my first friend, the tide waiter, who had escorted the portmanteau to the custom-house. He had remained there in attendance to watch for its departure, apparently loth to be separated from it without receiving some trifle by way of remembrance, observing as an apology, that his salary was so very small, that he should fail of obtaining a decent living, unless he recruited his finances by perquisites.

There is a great difference in this respect between the custom-house officers of Liverpool and those of New-York. The latter receive a more liberal pay, equal to about three dollars a day, as a compensation. They consequently find, that with common chances, they can make more profit from the regular emoluments of their office, than from pursuing a corrupt course. The obliging exertions of the tide waiters are rather retarded than expedited, when passengers,

habituated to the drill of European custom-houses, extend toward them the customary largess. That American custom-house officers, however, are all immaculate, far be it from me to insinuate.

The great amount of business transacted at the Liverpool custom-house may be the apology for the hurried manner of administering oaths, which is fitted to destroy all respect for their sanctity. When the invoices are handed to the officers to be attested, a murmuring sound is heard. The only audible words I could understand were the terminating ones, "so help you God ; kiss the book." In the same breath the stated fee is demanded. The bible, which is handed out to be kissed by way of sealing the oath, is so soiled and greasy from being frequently touched by unclean fingers, that it has become too revolting an object to be pressed to the lips. A clerk, long habituated to administering these oaths, it is related, was seized with a fever ; and whilst he lay in a delirious state, for two or three days he kept continually repeating in his accustomed manner, as fast as he could in the same breath, "So help you God, kiss the book, give me a shilling."

On my way to the Waterloo hotel in Liverpool, I soon forgot that I was in a foreign country, the dress and language of all around me being so nearly similar to those observable in New-York. The houses and streets, as well as the people who throng them, bear also a remarkable resemblance in general appearance, to those of the principal cities of the United States. The only striking difference appears in the uniform dingy color of the exterior walls of the buildings, which are darkened with the sooty particles of the smoke of the bituminous coal. The clear bright colors of fresh paint, which impart an air of neatness to the ranges of houses in most of the American cities, are no where discernible in the cities of Eng-

land. The vast consumption of bituminous coal fills the atmosphere with heavy smoke, which settles down upon the adjacent streets, and coming in contact with the surfaces of the large rough bricks, stains them of an uniform dusky hue, and throws a sombre shade over the long ranges of contiguous houses and stores. The chimneys of the furnaces of the steam engines are exceedingly lofty, and form conspicuous objects, with their summits of red brick rising above the surrounding house tops. They are built thus high for the purpose of quickening the ascending draft of air, to render the combustion of the fuel on the grates more perfect, and to discharge the imperfectly consumed portions of the fuel, which escape in the form of smoke, aloft amid the upper currents of wind, that bear them off from above the city, and dissipate them in the atmosphere. In hazy weather, these furnace-chimneys, notwithstanding their elevation, frequently become nuisances to the neighbourhood in which they are located. The smoke from them obscures the light of day, and fills the air with those little pear-shaped particles of soot, which floating about like motes, lodge upon the white linen cravat or shirt collar, and spread instantly, on being rubbed, into stains of an inky blackness. A change of linen may become necessary two or three times a day during this peculiar state of the smoky atmosphere. The vocation of a laundress, in a country where bituminous coal is the common fuel, is an employment of no inconsiderable extent and activity.

Notwithstanding the cheapness of coal, the best qualities of which sell in Liverpool for 14 or 15s. sterling per ton (about three dollars and fifty cents) the summits of the neighboring hill tops are enlivened by the moving arms of numerous windmills, which are commonly employed for grinding wheat, or *corn*, as these small grains are termed throughout England.



The only characteristic difference of dress which I noticed among the inhabitants, was that of the Welch market women, who compose a portion of the moving population of the streets of Liverpool. A group of them appeared in the street wearing men's common hats, and with their attire so carelessly arranged, that one might have supposed they had made their hasty toilet before the dawn of day, without the friendly light of a candle. One of these fair ones from the neighboring district of Wales, was occupied in arranging her dress by the aid of a looking-glass, which she held in her hand before her face, as she walked along the flagging of the street, unmindful of the numerous witnesses who regarded her, and of the shocks of jostling elbows, whilst she contemplated her reflected charms with an evident smile of self-complacency.

I saw in one of the streets, a practical illustration of Mr. Telford's plan of making roads, which has novelty to recommend it, if it possess no greater merit. The foundation of the road is first regularly paved with pebble stones, like those of the common streets of a city, with this remarkable difference, however, in the execution of the work.— Each paving stone is set with its flattest side downwards, and its most pointed angle projecting upwards, to form the face of the pavement; just the reverse of the usual mode of paving streets. Between the paving stones there are, of course, abundance of open wedge-shaped spaces, which are to be filled up with broken stones, or with very coarse gravel, to the depth of three or four inches, to make a level surface. I have not had an opportunity of examining any roads which have been long in use constructed upon this plan; but judging from the manner in which the best flat surfaces of the lower paving stones are imbedded in the ground, and the constant tendency of the wheels of heavily laden carriages to crowd down more solidly the small pounded stones or gravel into the wedge-formed cavities

intended to receive them, this sort of road must prove exceedingly durable, and quite as smooth as the best McAdam roads. In laying common paving stones, the workmen usually pay so much attention to giving the surface of their work a sightly appearance, by turning the best face of every stone upwards, that the lower pointed extremities are found to be pressed downwards, or to settle under the wheels, and the sand which gushes up between them from the bed beneath, is washed away by the rains, or scraped up by the scavengers. Paved streets are for this reason, always becoming lower, and sunken into hollows where the bed of the pavement is soft and yielding. Such being the irregularity of surface and costliness of repairs incident to paved streets, the McAdam roads, or those on the plan above described, are now generally preferred for the streets of the English towns.

After establishing myself at the hotel, my attention was directed to observing the customs which prevail in the administration of the civil affairs of eating and drinking, in order to conform myself to the usual modes of living adopted by English travellers in their own country. In practising some parts of the internal economy of an English hotel, an American feels a little awkward. A breakfast, a dinner, and even tea or supper, are matters of serious consideration, and are not here precipitately shared by the hungry guest with only the trouble of drawing his chair to a well spread table, on equal terms with some scores of fellow-lodgers, as is commonly the case at the hotels in the United States. At some of the minor inns, the commercial gentlemen, or travellers, as they are emphatically called, or travelling agents for the sale of various manufactures, as they might more definitely be termed, dine together at a common table. But at the hotels and large inns, each individual or distinct party of gentlemen take seats at separate little boxes or tables,

arranged in order around a hall or coffee-room, and partake of their breakfasts or dinners in a solitary, unsocial manner. After having taken a seat at a table at the hour most convenient or agreeable, should you not have left an order for the specific articles for dinner, you have gravely to consider the bill of fare handed you, and to select what will best suit your palate. The bread and potatoes are always furnished; but all the viands which you may order to be placed on the table, are specifically charged. A landlord's account of a few weeks board, when made out at large, swells with a daily growth to a frightful size.—The numerous items darken the whole surface of a fair sheet of paper with all the daily details of gastronomic performances upon roast beef, fish and pastry—even including the almonds and raisins, and fruit of the dessert. Some study is required to plan out a dinner, and arithmetical powers must be exercised in settling for it.

Commencing with the morning of the first day of my arrival, I seated myself at my solitary breakfast table, and summoned the waiter before me to receive orders for my morning meal. Having determined upon the selection of tea, as my usual favorite beverage, the waiter presented, instead of the infusion already prepared as I expected, an empty teapot, freshly rinsed with hot water, and a small catty box stored with several varieties of the Chinese herb. Having always been in the habit of receiving a steaming cup under happier auspices, with the honors of the tea table dispensed by fairer hands than my own, I was totally unprepared for the sudden apparition of an empty teapot with its yawning mouth opened wide before me, to be replenished according to my own taste. The process of making a palatable cup of tea, it is well known, requires some little share of the practical skill of a good house-wife, to apportion the requisite quantity of the herb to the water in which it is to be infused. Conscious of my deficiency

of skill in this matter, and ashamed to acknowledge it, lest I should excite the smiles of those who were enviably sipping the well prepared contents of their cups around me, and loth at the same time to manifest so much apparent fickleness of purpose as to order coffee, (which is always ready prepared, and is for this reason, as I afterwards discovered, commonly ordered by Americans, novices in this art like myself,) I hesitated, until quickened to a decision by the appearance of the waiter ; who continued to stand like some haunting spectre, presenting the still gaping mouth of the teapot extended at arm's length in front of me. Thus driven to desperation, I extracted with scrupulous nicety a small portion of the contents of one of the catty boxes, and discharged the few shrivelled leaves into the receptacle extended to receive them. On perceiving the scanty measure dealt out by me, the waiter shook the teapot, and looked into its obscure cavity, to assure himself that he did not labor under an optical delusion; and then again at me with a significant smile. He however filled the vessel with boiling water from the spout of the brightly scoured copper tea kettle, which usually in winter occupies a corner of the grate, simmering and emitting vapor, and ready at hand for all emergencies, whether it may be to temper the morning beverage, or evening dram of whisky punch or toddy. Whilst the tea is steeping, the waiter places before you the usual breakfast of an Englishman—a roll of bread, or dry toast and muffins, some eggs, and butter, together with the sugar bowl and milk pot. Whilst these preparations are making, you have leisure to dispatch the perusal of the morning papers, which form an indispensable accompaniment of the breakfast table. Thinking more of the result of my first essay, than of the contents of the papers before me, I watched with intense interest the first gush from the inverted beak. It was truly dismaying to behold the bright limpid stream of



boiling water make its exit, almost as colorless as it entered. On a second trial, I proceeded with a bolder, and more unsparing hand, and was scarcely more gratified than by the first experiment. The white porcelain cup was now contrasted with the deep amber color of the fluid poured into it, the concentrated strength of which might have disturbed even the nerves of a giant. This cup-full was also rejected, and a third experiment rendered me forever master of the art and mystery of the due preparation of a cup of tea.

There appears to be one peculiarity in tea drinking as practised in England, which is little regarded in the United States. It is common to mix the green and black teas together, to combine their flavors in the same savory cup.

Whilst engaged in delivering some letters, I stopped at an extensive chain cable manufactory, the smoky precincts of which presented to view the appearance of the very workshop of Vulcan, with numerous glowing forges arranged in lines, and excited by the asthmatic heavings of resounding bellows, the expiring, moaning blasts of which were mingled with the sounds of the strokes of hammers on the ringing anvils. The first process in the manufacture of chain cables is the application of a huge pair of shears, to cut the bars of iron into pieces of a uniform length, suitable for the links. These pieces of iron are bent, like osier twigs, by a powerful machine, to the proper form for making links. After each link is welded, the surface is rendered smooth by smaller hammers and swedges. One of the most interesting processes performed here is that for proving the strength of the great chain cables, after they are completed. The chains, which are to be subjected to proof, are extended on a massy frame, or table, sixty or seventy feet long. Strong cast iron cog-wheels and pinions are arranged in succession with a combination of levers, to produce the necessary force for the tension and

proof of the strength of the chain. The power is applied to the chain until it sustains the stress with which it is required to be loaded, which is indicated by the lifting of the weight hung on the long extended arm of the last of the train of levers, like the weight on a steelyard. These weights are, of course, regulated by the size of the iron of which the links are composed. Some of the great chains for merchant vessels are subjected to a tension sufficient to lift forty tons or more; and whilst subjected to this stress, each link is submitted to the shock of a blow from a hammer, as a severe test to cause it to yield at once, or to discover any latent flaw it may contain. One of the clerks, Mr. Penn, who has published a very useful book containing tables of the weight of bars and plates of iron of various dimensions, stated to me that the credit of their work, as well as the preservation of human lives, so much depended on the faithful proof of the chain cables, that the utmost caution is exercised in testing them before they are sold. The best sort of iron is used in the manufacture of chain cables, the strength of a bar of which, one inch square, is usually rated as adequate to lifting a weight of about twenty or twenty-five tons. It is stated by Mr. Penn, as the result of numerous experiments which he has had the opportunity of making, in the chain cable manufactory of Messrs. Brown, Logan & Co. of Liverpool, that a bar of common iron one-eighth of an inch square, will not bear more than 630 to 665 lbs. weight; whilst a bar or rod of the same dimensions, of the selected cable iron, will bear from 780 to 800 lbs. These experiments afford a ready estimate for calculating the strength of iron for practical purposes.\*

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\*To calculate safely, for practical purposes, the strength of iron to resist stress applied longitudinally to pull it asunder, one half of the ultimate strength of ordinary iron should only be taken as a standard; or about 300 lbs. weight to each rod or filament one-eighth of an inch square, con-



Chain cables are now in general use in ships of war, as well as in merchant vessels, and have in some degree supplanted those made of hemp. This preference, mariners alledge, is owing to the superior durability of chains, rather than to their superior strength in withstanding the stress to which they are exposed, the advantage of elasticity being in favor of the hempen cables. The fibres of hemp are subject to the dry rot, which deprives them of their strength, without materially changing their external appearance. The captain of an American ship, employed in the trade to the East-Indies, stated to me, that after carrying one of these great hempen cables, carefully stowed away in the ship for several years, and preserving it to the last moment as the main dependence, in cases of emergency, for the safety of the vessel and crew, it had become so thoroughly decayed, although in external appearance sound, that it was broken in merely drawing it forth from the hold. A most painful state of suspense is for this reason commonly experienced by the mariner during a gale on a lee shore, when he drops the anchor attached to an old hempen cable ; until it has proved its soundness by resisting a few shocks of the heavy waves.

In a great commercial city like Liverpool, the manufacture of cables and cordage forms an important branch of business. Attracted by the sound of machinery in one of the rope-walks, I stopped a few moments to examine the process as managed here. The peculiar mode of manufacturing the patent cordage and cables, consists merely in laying the strands of the rope in regular order, in such a manner that each may occupy a certain relative position,

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tained in the sectional area of the bar. Thus a bar of one inch square, contains 64 filaments, each one-eighth of an inch square, ( $8 \times 8 = 64$ .) Multiply 64 by 300 and you have 19,200 lbs. weight for the load that may be safely and permanently suspended by a bar of ordinary iron of one inch square—thus making due allowance for the usual imperfection of flaws.

either on the surface or in the centre of the rope, throughout its whole length. By this exact arrangement, a more equal tension of the hempen yarns is insured; and when the external yarns are chafed or worn away, those nearer the centre remain throughout unworn, and retain their original strength. This desirable improvement is attained by using a circular metallic plate perforated with circularly arranged holes, like a colander, through which the strands pass in regular order, to a determinate relative position in the rope, into which they are to be twisted.

One of my Liverpool friends conducted me over the various apartments of the Liverpool Exchange, which is a magnificent edifice of hewn stone. Here the merchants usually assemble about two o'clock, when the buzz of business is heard, like the whispering sound of the leaves of a forest stirred by an autumnal wind. The Liverpool Exchange is said to be a more splendid building than any other of the kind in Europe.

The Town Hall, fronting the Exchange, is fitted up as if designed for festal purposes and dances, rather than for the accommodation of citizens convened for political purposes. If the feasts of the magistrates of Liverpool correspond in splendor with the costly furniture of their saloons, they must still maintain unimpaired the credit of being the veritable "well fed English aldermen,"—a description almost identified with the names of turtle soup and John Bull.

On a conspicuous pedestal in the centre of the area, in front of the Town Hall, is a monument erected to Lord Nelson. It is not one of those plain monumental structures, which modestly depend for the interest they excite in the spectator on "the magic of a name" inscribed on their imperishable tablet; but owing to the patriotic zeal or false taste of some artist or committee, it is encumbered by ornamental groups of statues. A bronze figure of the idol-

ized hero appears on the pedestal, in the attitude of receiving from another figure, representing Victory, four naval or rostral crowns ; whilst almost at the same instant the bony fingers of a skeleton figure, representing Death, appear extended from beneath a shroud to touch the heart of the hero, to stop the pulsations of life at the moment of his being crowned by Victory, and whilst flushed by success. The foot of Nelson rests upon the body of a dead foe, which serves as a sort of stepping stone, upon which the conqueror elevates himself to receive his rostral honors from the friendly hand of Victory. The whole group, when viewed together, is neither agreeable to the eye, nor calculated to excite pleasing emotions in the spectator. A hero trampling on a prostrate foe is an unmanly spectacle. To behold him in the act of aspiring and reaching forward for the laurels of victory, mounted on the lifeless body of his fallen enemy, divests those very laurels of their magic charms. The poet who has a true taste, always conceals the scene of triumph, which in this instance is brought forward by the sculptor as a prominent object of consideration to awaken the recollection of the blood of fellow-men, profusely shed on the field of battle to swell the conqueror's fame. This part of the group, it might well have been the study of the artist to have carefully kept out of sight, when he aimed to exalt the merit of the mere warrior, or advance the ideal standard or the estimation of military glory. In addition to the exhibition of bad taste already described, this monument "lifts its head and lies," like its taller brother erected in London to commemorate the great fire, ascribed by its lettered tablet to the Catholics.\* An American, when he

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\*The inscription on the monument erected in London, to commemorate the great fire, has been lately effaced. This tardy act of justice gives at last to the monument the character for truth, which all monuments must bear to ensure respect for the historical facts, which they are intended to commemorate.

views on the four sides of the pedestal, four sculptured figures, emblematical of the four quarters of the globe, Europe, Asia, Africa, and America, all writhing in chains and subjection at the feet of Nelson, is disposed to question the presumption of the artist, who has humbled America in chains as a fallen adversary, and has thus sacrificed truth at the shrine of national vanity. When, it may be asked, was America subdued or humbled, by the arm of this naval commander ?

The streets of Liverpool are lighted by gas, which is also introduced into the shops and houses by small pipes, that are conducted over the various apartments. For lighting close rooms, the fetid odor attending the combustion of coal gas has been found disagreeable. In the shops containing a glittering array of silver ware, the portion of sulphuretted hydrogen, that escapes from the gas pipes unconsumed, pervades the air and penetrates every case, coating the purest silver with a black crust, as if alloyed with lead. Even the complexions of the fair, rendered artificially white by certain pigments or cosmetics, are immediately attacked by this gas, which combines with the metallic oxide forming the basis of the paint. The snowy tints of the skin, under the effects of the gas, become gradually darker, like the dusky twilight stealing over the firmament, until an European might be mistaken for an Ethiopian beauty. One is rendered sensible of approaching the gas works, by the effluvium or peculiar odor of the products of the distillation of the coal, which is here so offensive as to have become a subject of complaint to all the neighborhood, according to the statement of one of the workmen. To carry off the disagreeable odors and to discharge them in the air with as little annoyance as possible to the disquieted neighbors, the chimneys are built so lofty as to rival the spire of a church, being about 150 feet high. They are conspicuous land marks for di-



recting the stranger in his rambles over the city. The formation of coal gas is effected in a simple manner, by placing bituminous coal in cast iron retorts, or air-tight hollow vessels of this metal, and subjecting it to a strong heat in a furnace. Oil, rosin, wood, and indeed almost every substance which yields flame during combustion, may be used to create inflammable gas. The coal, when thus heated in red hot iron retorts, parts with the inflammable gas, which rising in the form of smoke is conducted by pipes to a vessel of lime water, through which it passes in ascending bubbles, to become purified by it; after which it continues to pass on through pipes until it enters an immense sheet-iron gas vessel, of the capacious size of the hold of a ship, suspended like an inverted tumbler over a cistern of water; and so accurately balanced by ropes passing over pulleys and connected with weights, as to rise in the water, whilst the gass passes into it, and renders it more buoyant, and also to descend when the gass passes off into the pipes for distribution. A very ingenious contrivance is employed to measure the quantity of gas produced each day, and the quantity that the inhabitants of each house consume. A small machine resembling a little water wheel, with floats fitted to move around in a tight metallic case, is connected with the current of gas passing through the pipes. In its passage the gas drives before it the floats, causing the wheel to turn regularly, as if a stream of water were acting upon it. At every revolution of this wheel, a certain quantity of gas is enclosed between each of the floats. The number of revolutions of the wheel is indicated by a train of cog wheels, like that of clock work; and the hand or index moving around the dial plate, also resembling that of an ordinary clock, points out at once on inspection the quantity of gas that has passed through the machine. To avoid the impurities of coal gas, whale oil is now frequently substituted in place of the coal in the red

hot iron retorts, into which it is caused to trickle slowly. Four feet of coal gas are required per hour, to produce about as much light as an argand lamp, or six wax candles. A gallon of whale oil, it is stated, affords 100 cubical feet of oil gas, and  $1\frac{1}{2}$  cubical feet will burn for an hour and yield as much light as an argand lamp. Oil gas, it appears, possesses as much illuminating power as thrice its volume of coal gas.

Gas is now used in most of the large towns of England, to light the shops and dwelling houses as well as the streets. The annual expense of a light equal to that of an argand lamp is about £1, 3s; (\$5,60) with permission to burn the same every evening from sunset until nine o'clock. Where many lights are used on the same premises, a considerable discount is allowed. The pipes are laid to the front walls adjoining the streets, by those who supply the gas.\* In London a company has been formed to supply gas compressed into small vessels or portable lamps, somewhat like those used for burning oil. The gas is injected into the lamps by a powerful forcing pump, and is retained by a stop cock. On opening this cock, a fine small stream of gas is allowed to escape, which burns with a bright jet of flame, and, it has been stated, is as economical to the consumer as candles. In proportion as the volume of gas becomes diminished, the stop cock is turned further to allow of its more free escape, to regulate a uniform supply of light.

The Botanic Garden, into which the stranger is commonly introduced, at this early season, before the vernal equinox, appears clad in the sober livery of winter; and only in the green houses is perceptible the fresh verdure of anticipated spring. The surface of the ground, tilled the past

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\*The cost of gas for lighting shops and houses in Boston, is about one-half cent per cubic foot. It is stated that one burner of the size commonly used in shops, consumes about  $3\frac{1}{2}$  cubic feet per hour.



season, appears here covered with a moss or mould, indicating the excess of moisture which prevails in this climate.

The asylum for the blind is an interesting institution. The stranger, after paying a tribute of admiration to the commercial enterprise of the inhabitants of Liverpool, turns with grateful emotions to this proof of their humanity. Here, many unfortunate beings, for whose eyes the light of the sun is poured forth in vain, appear in various neatly arranged apartments, busily employed in earning their daily bread by the labor of their skilfully directed hands. By means of long and patient practice, their sense of touch is rendered so acute, as to supply, in a degree, their defect of vision. Seated at their various labors, with their sightless orbs exposed to view, they present a spectacle which excites the warmest feelings of compassion for their melancholy bereavement. They patiently exert their remaining faculties in making baskets ; weaving webbing, or hearth rugs ; spinning twine, or fish lines ; and braiding whip lashes. Some of them who sew, succeed even in threading needles—while others, who make shoes, are enabled to guide the bristles of the waxed ends into the awl holes. The peculiar advantage of this charitable institution consists in furnishing to those who are most unfortunately both poor and blind, not only a comfortable home, but valuable instruction in various handicraft arts. The practice of these arts beguiles their time, and by putting into their hands the means of gaining a respectable subsistence, relieves them from the apprehension of a dependence on the stinted support of the poor-house. In the asylum, music is taught with peculiar success ; and those who are properly instructed, become excellent performers on the organ, and on other instruments of music. Hence they are enabled when they leave the walls of the institution to live independently of public charity, and even to

become useful members of society, as organists in the churches, and instructors in music.

The increase of Liverpool has nearly rivalled that of New-York. Between these two cities, the communication by numerous packet ships is almost as constant and unintermitted, as between two neighboring villages. The rapid increase of the parish or borough of Liverpool is exhibited in the following table. The census of England is taken regularly, once in every ten years, in the same manner as in the United States.

	Year.	Population.	Per cent increase in 10 years.
Liverpool,	1701.	5,714.	
	1811.	94,376.	22.
	1821.	118,972.	26.
	1831.	165,221.	37.
New-York,	1731.	8,622.	
	1820.	123,706.	
	1830.	202,960.	64.

In this tabular view, the population of the neighboring towns of Everton, Kirkdale, West Derby and Harrington, are not included; these being adjacent to Liverpool, almost like its suburbs, swell the amount of population collected on this spot to upwards of 200,000. New-York also has in its neighborhood, the extensive town of Brooklyn, which will render its population much greater than that of Liverpool,—its sister commercial city. In 1650, Liverpool could boast of only fifteen vessels of the average burthen of from 15 to 35 tons; and so late as 1760, there were less than 24,000 tons of shipping belonging to this port, where the very dock-dues during the year 1830, were nearly a million of dollars. Such are the changeable fortunes of cities dependent on commerce. Here a modern Tyre is built up, and there the site of an ancient one is occupied by only a few huts of solitary fishermen; and the

waves lash the forsaken strand, where fleets were moored, and merchants congregated.

I took a temporary leave of some agreeable acquaintances, and after a short ride of four hours, alighted at the Bridgewater Arms, in Manchester, distant 36 miles from Liverpool. The surface of the country between Liverpool and Manchester appears to be gently undulating, and is subdivided into small fields by bristly hedges of thorns. At this season of the year, the hedges are divested of all the charms ascribed to them in the poet's verse. Bare of every leaf, they appear, as they actually are, masses of tangled brambles. Beautiful as they may seem, in the pride of their summer glory, yet when divested of leaves and verdure by the frosts of winter, during one half of the year they contribute about as much to the ornament of a picturesque landscape, as a Virginia fence, that pursues its zigzag course across the country, like that of a ship tacking and worming its way against the wind. A few hedges are composed of evergreen holly, the perennial verdure of which is very ornamental to English landscape views during the winter. The building materials, of which the farm houses and barns are constructed, are mostly of substantial stone or brick, and of thatch or slates for the roofs. No roofs are to be seen covered with the wooden shingles, which are so universally used in the United States. The few stone fences observable are of free stone or sand stone, split into regular blocks. In the hilly and less populous districts of England, ordinary loosely built stone walls are very frequently to be seen, constructed for fencing fields. They are in fact erected in all parts of England, where an abundant supply of the suitable materials can be collected from the fields; and the hedges are employed, like the wooden rails split from the trunks of trees in the United States, as a ready substitute for imperishable walls of granite. Although the hedges may be preferred by the man of

taste, or by the passing traveller, who may admire, during the finer seasons of the year, the deep verdure of their leafy mural fronts, which present an impenetrable foliage near at hand, and chequer the distant hill side with lines of a brighter green than that of the herbage which they serve to protect ; yet the practical farmer, were he to be governed in his decision by economy, would probably prefer the cheaper stone fences. To protect the quicks, or young thorns, when set out, a temporary fence must actually be made in the first instance ; otherwise the fields are left open, and the tender sprouts are browsed by the cattle from the road side. In some instances, I have observed a double fence to protect the young plants from the cattle within the pastures, as well as from those without them. A ditch is also to be dug in front of the hedge row, and the earth heaped around the roots of the thorns ; the dead plants are to be replaced by vigorous ones to fill up the gaps ; and on every returning spring the labors of the hedgers are required to trim and splash the branches.—When a stone wall falls down, the materials remain on the spot and are readily replaced, and no extended shade is cast from it over the surface of the adjacent soil, nor do fibrous roots plunge beneath it to exhaust its fertility. Unless frequently trimmed and cropped, the branches of the thorns become lofty and rambling, like those of small trees, and appear scraggy and irregular. In many parts of New-England the walls serve as a repository for the superabundant stones gathered from the surface of the fields when turned up from it by the plough. In the comparatively more fertile fields of Old England, the rocks very generally lie beneath the reach of the ploughshare in regular strata or seams, and even the stones required for buildings are obtained by clearing off the earth, and by making deep excavations, to break up the layers of sandstone. Whole districts of country, in some of the northern

portions of the United States, are sprinkled with the projecting pointed rocks and small stones, which obstruct the course of the ploughshare. I have seen an English emigrant ploughman look on with mute wonder at the evolutions of the glancing ploughshare, writhing and flashing among the stones of a New-England farm, guided by the skilful hands of the proprietor. New-England is emphatically the country of granite, and Old England of the softer freestone, although in Cornwall, Wales and Scotland, abundance of granite rocks may be found. The fertile western portions of the States of New-York and Massachusetts present fair valleys resembling many of those which a traveller admires in England. During a long course of successive generations of men, improvement has here been added to improvement, fields have been levelled and smoothed by cultivation, until the whole island has been made to bloom like a garden, and truly to become "a smiling land."

The ploughing and other heavy labors of husbandry are performed by horses. Not an ox have I seen yoked to a cart or plough, during my rambles over England. There are, indeed, few more oxen in the whole county of Lancashire, judging from an official return once made of their number, than are sufficient to supply the inhabitants with their favorite viand.

The subject of the comparative advantages of employing horses instead of oxen, for performing the ordinary labors of agriculture, has been long discussed in many parts of the United States, the saving of time by the superior speed of the horse, being considered more than an equivalent for the value finally obtained for the fat beef afforded by the latter animal. Much probably must depend on the nature of the soil to be tilled. In the stony ground of some parts of New-England, the patient and persevering habits of the ox have won the favor of the far-



mer; and the same good qualities have been duly appreciated in some of the counties of England; but this animal commonly leads an easy life here, being destined principally to furnish the savory national dish—the roast beef of Old England.

Although in travelling over England, few large tracts of forest are visible, yet so numerous are the clusters of trees on the borders of the fields by the hedge sides, that the distant landscapes are not deficient in the graceful beauties of a well wooded country. The tree tops become apparently studded more closely together where they are situated more remote from the spectator, as if rising behind each other in closer succession, until they finally seem to unite near the verge of the horizon, to form one unbroken mass of foliage, like that of the boundless American forests. Around the trunks of many solitary forest trees by the road side between Liverpool and Manchester, the English ivy appears to have twined its adhesive branches, like the wild grape vines, or wild ivy of the United States. The English ivy is a plant of perennial verdure. Its creeping filaments follow the horizontal limbs of the trees to their extreme points. In winter, the ivy decorates by parasitical evergreen foliage the branches from which the deciduous leaves have been seared by autumnal winds, or stripped by wintry frosts. The leaves of the English ivy are peculiarly glossy, and reflect the sunbeams from their polished deep green surfaces, as if they were sprinkled with sparkling dew drops.

*Manchester.* With the name of Manchester extensive cotton mills are so intimately associated in the mind, that on entering the town, the stranger gazes in various directions to catch a glimpse of the buildings in which so many thousands of the inhabitants find employment. Carts, loaded with bales of cotton and boxes of manufactured goods, and with huge piles of cotton cloths and



yarns, heaped up in bulk, like loads of hay, are to be seen passing in the streets, presenting a scene of no inconsiderable bustle and industry. The cotton mills are situated near the banks of the canals, or by the river side. These situations are selected not only for the convenience of transportation by navigable waters, but also for the purpose of obtaining the abundant supply of water, which is requisite in operating low pressure condensing steam engines. After a short stroll over the town, the waning of my strength from indisposition reduced me to the necessity of shutting myself up in one of the rooms of the hotel; where, shivering and feverish by turns, enveloped in a blanket, and cowering over a coal fire, with no friend within three thousand miles, I began to experience some of those sensations of loneliness, which at times depress the spirits of a traveller when far from home. There are few moments in the period of a man's existence more desolate and withering than those in which the traveller, surrounded by strangers in a foreign city, perceives that his strength is deserting him, and that sickness is about to arrest his career. After having deemed, when in the full enjoyment of health and vigor, the broad area of a whole country to be a comparatively contracted range of survey; and after having gone on his way rejoicing in the enlivening sunshine and in the constantly changing prospects of beautiful scenery, he is suddenly compelled by languor to withdraw to a darkened, confined room of an inn. Shut out from the view of the landscape of hill and valley which had delighted his vision, with his feverish cheek pressing a pillow, and his wandering eyes vacantly gazing upon the unconcerned faces of his attendants, or upon each article of furniture in his apartment, and even upon the very figures and cross-bars of the drapery that overspreads him, the sudden transition comes like "the flow of water over his soul" to quench his ardent feelings.

His thoughts are at once withdrawn from the consideration of objects of the exterior world, over which he may have been roaming, to the calm investigation of the concerns of his own bosom. Whilst he listens to the bursts of laughter, which at times resound through the passages, and reach his heart like chilling bolts of ice, he is made to feel how utterly insignificant is the existence of one solitary human being to the multitude around him. He is reminded of the description of the passenger who swoons and sinks upon the stone pathway of a populous city.—The hurrying crowd, unheeding, pause not to contemplate the spectacle. A few compassionate hands lift him from the earth, and bear him away, and the wave of population rolls onward, and closes over the spot, and all is soon forgotten. Having passed a day or two occupied by these reveries, I took a seat in the coach for London, with relaxed sinews but a firm resolution to push forward, under cover of a triple armor of Welsh flannel, to the last extremity.

Stockport, at the distance of eight miles, is one of the considerable manufacturing towns, by which Manchester is surrounded. To all of these towns Manchester serves as the common market for the sale of manufactured goods, and for the distribution of the raw materials. So steep are the hills, upon which this busy town is situated, that the wheels of the coach are chained to insure safety in descending to the deep valley in which the mills and many of the houses are erected. In this place are extensive cotton manufactories and works for printing cotton cloths; and also the only woollen factory in England in which power looms are employed for weaving broadcloth. In this solitary woollen mill, surrounded by cotton mills, and in a section of the country where the population is exclusively engaged in the cotton manufacture, the proprietor has ventured to make those experiments

and improvements in introducing labor-saving machinery, which are so commonly attended with disastrous results, when attempted in the centre of a great manufacturing district, surrounded by dissatisfied and riotous workmen. The broadcloth weavers in England form a most numerous class of laborers, and if superseded in their means of gaining their daily bread, by the sudden and general application of the power-loom, might form a considerable army of disorderly machine-breakers. For many years to come, the woollen manufacturers of England probably will not hazard their property by attempting to introduce into general use the power-loom for weaving broadcloth. The danger of exciting riotous attacks of discarded workmen tends to impede improvements in British manufactures, and to operate favorably to those of other countries. In the United States every improved labor-saving machine is sought out with avidity by the proprietors of mills, and submitted to without a murmur of discontent from the workmen. In the weaving of broadcloth by the power loom, the American manufacturer is already enabled to perform this difficult and laborious process, at a less cost, and in a more expeditious manner, than the most careful and economical woollen manufacturer in England.

After travelling over an uninteresting section of country, Macclesfield, the celebrated seat of the silk manufacture, next attracts the attention. The prosperous condition of the staple business of Macclesfield is manifest from the number of new silk mills and cottages now erecting. So great has been the demand for laborers, that the price of wages has advanced nearly ten per cent, and numerous families have been imported from Ireland—the teeming hive, which furnishes an annual and never-failing supply of laborers, to meet the demands, not only of England and Scotland, but even of the United States, and the Indies. On almost every house erecting in an American city, may

be seen the emigrant from the Emerald Isle, with a hod upon his shoulder.

Whenever an extraordinary activity prevails in any branch of manufactures, and workmen are scarce, a whole district may be speedily supplied, by sending an agent to Ireland, to import from thence any number of families which may be required. When a reverse in trade takes place, and they can no longer be profitably employed, they are all shipped back again, to prevent their becoming chargeable to the parish. The English and Scotch mechanics are aware that multitudes of Irish laborers are always ready to be transported into England, to supply every extraordinary demand for labor, and to prevent any material permanent advance in the rate of wages. Between the Irish, and English and Scotch laborers, there exists, therefore, no very cordial fellow-feeling. The latter regard the inroads of the former with about as much satisfaction as the farmer does the insects and the birds, which swarm in his fields and relieve him of a portion of the labors of the harvest.

The wages of the women in the silk mills are about eight shillings (one dollar ninety-four cents) per week, on an average; and boys, fifteen years old, obtain nearly the same amount of wages. A workman in the silk mills earns about twenty shillings (four dollars eighty-eight cents) a week, or eighty-one cents per day; being nearly as much as the same workman could earn in the United States.

Having called at the office attached to one of the most extensive silk mills, the proprietor, with much civility directed a clerk to conduct me over the works, and to point out the various operations in the manufacture of the splendid fabrics of silk. The machinery, as well as the operations of a silk mill, are, to appearance, exceedingly simple, when compared with the more complex mechanism required for the manufacture of cotton. The labor of



drawing out and spinning the first attenuated thread is anticipated by the silk worm, who furnishes already prepared a finely spun filament, which must ever set imitative human art at defiance. A spider's web is composed of threads hardly more delicate than those prepared by the silk-worm. Owing to this extreme delicacy, much of the difficulty encountered in the early stages of the manufacture consists in unwinding the cocoons, and in doubling and twisting the slender fibres. The worms spin a continuous thread to form their little balls of silk, or cocoons; which are unwound and reeled with great care, to produce the raw silk purchased by the manufacturers. To form a thread of sufficient size and tenacity for the use of gross mortals, the original gossamer-like thread of silk must be doubled many fold. The original fibre spun by the silk-worm may be discerned on unravelling a small piece of sewing silk. The process of winding, doubling, and twisting these almost invisible filaments, is termed, technically, *throwing*; and the product is called thrown or organzined silk. In performing this process, about ninety women are employed in one apartment; and in the various other apartments of the manufactory, nearly three hundred persons are busily at work. The mechanical processes of preparing the silk are sufficiently simple to be easily understood. But the profit of the manufacturer depends on the skilful choice of colors for the innumerable brilliant shades of dyes, and on the selection, from the numerous patterns, of those designs which will command the all-important approbation of the ladies. The sprigs and other figured devices are formed on the web in the loom, by means of strings attached to the heddles, by depressing which, the threads of the weft, in certain spots, are made to pass above those of the warp, which form the raised or embossed figures. A boy, called the draw-boy, stands by the loom, near the weaver; and pulls one string after

another, in an orderly arrangement, whilst the weaver beats up the cloth. Thus, the most tasteful designs seem to grow by magic on the glossy tissue of silk, and to expand in various figures and glowing hues, whilst neither the weaver nor his draw-boy appears conscious of the effect he is instrumental in producing. Six or eight shuttles, each furnished with silk weft of a different hue or color, are employed by one weaver. It would confound an unpractised reader, were a particular explanation attempted of the complicated process which produces the sprigs and flowers on the fabrics in the looms for weaving silk stuffs. A large fish seine, with its intricate meshes, would hardly contain a greater mass of twine, than that which is employed upon a single loom. The principal expense in the silk manufacture is for the raw material, which sells for four or five dollars a pound, more or less, according to the quality.

To preserve this valuable material from nocturnal depredations, this mill is partially inclosed by a high brick wall, forming a yard, in which a frightful bull dog is let loose from his chain, every night, to range about the premises. Whilst we were passing near his kennel, the furious animal sprang forth, producing by his rapid movement a sudden and ominous rattling of his chain. I never felt more satisfaction in the power of links of cold iron to maintain their tenacity, than on this occasion, when they were straightened like a strained line, as the dog sprang forward with expanded jaws. His rage became intense when he found that he was unable to spring beyond the length of his chain. To stand in front of a full-blood English bull-dog, and to contemplate his rage, rendered impotent only by the uncertain tenacity of the welded links of a small chain, is no enviable situation. The imagination is every moment suggesting that the animal may be instantly set free in consequence of the fail-



ing at some flaw in the metal, or the imperfect workmanship of the artist who forged it. These bull-dogs are frequently employed to guard valuable shops and warehouses against midnight depredations of thieves; and for this purpose they are exceedingly well adapted, being rendered so extremely ferocious from being kept constantly irritated by their chains during the day, that they are not during the night to be caressed or bribed by proffered food to a neglect of their duty. They are found to acknowledge as their friends none except those who are in the habit of supplying their daily food. Even the clerk who accompanied me shrunk from the presence of the fierce animal before us. Few midnight marauders would venture to trespass on the limits of a yard or building entrusted to such a guardian.

The ride from Macclesfield to Birmingham is enlivened by the usual beautiful English scenery of parks, groves, gardens, pleasure grounds, and artificial ponds. Some of these, belonging to the Earl of Stafford, attract the particular notice of the passing traveller. On the green slopes of distant hills, fine country seats occasionally burst upon the view from amid clusters of shrubbery and trees, artfully arranged to allow of a sudden glimpse of them through opening glades; when, as you are hurried onward, they are coquettishly hid again behind intervening clumps of shrubbery and evergreens.

The objects of curiosity, which a stranger first visits in Birmingham, are the glittering Show Rooms of the manufacturers of steel and of other metals, susceptible of a brilliant polish. These rooms are tastefully decorated with ornamental fixtures, and with columns and arches constructed at no inconsiderable expense by the several rival proprietors to exhibit to the best advantage the various articles of cutlery, glass, and jewelry, manufactured in this celebrated "toy shop of Europe." Here you behold, ar-

ranged in glass cases, like those of a museum, various implements of exquisitely polished steel, vases and utensils of silver, penknives with hundreds of blades, and scissors of such colossal dimensions that you may pass between the widely extended edges; and others again of such diminished proportions that a microscope is handed to the visitant, after he has failed to trace their perfect outlines with the naked eye. In one apartment there is a great bronze vase, twenty-one feet in circumference, modelled after an ancient vase found in Italy.

The manufactories of hardware in Birmingham, are not conducted, like those of cotton at Manchester, under the vigilant eye of the proprietor, or of superintendants; but each workman commonly plies his trade at his own little forge, as a sort of sub-contractor with his principal; who puts out the forging of various implements of steel and iron by the piece, at a specific price for each. A pair of scissors, for instance, is forged in one place by the workman, who returns the roughly hammered iron to his employer. These forged parts of the scissors are then put out to another set of workmen, to be ground and polished in some other place; whilst the person who is supposed to be the manufacturer may merely cause the parts to be rivetted together, or perhaps only to be papered up in packages. These artisans are frequently seen in the streets of Birmingham, with half finished articles of hardware dangling on strings, suspended over their backs, whilst they are proceeding on their way to or from their humble workshops. When the Birmingham dealers, or Brumagem men, as they are familiarly called, receive orders for cutlery, they thus make their contracts with numerous individuals, who, at the stipulated time, present their manufactured articles at the warehouses of their employers. Where machinery and steam power are required for completing the several processes of manufacture, the proprie-

tors prepare buildings, with suitable workshops or apartments, to accommodate the workmen. This is particularly the case when the materials are to be gilded or plated with precious metals, the distribution of which into the hands of numerous scattered workmen would be attended with hazard and losses.

At a large Iron Foundry, I observed a newly invented plan for supplying the furnaces of steam engines with fuel. A hopper, of sufficient capacity to contain a quantity of coal for the consumption of several hours, is placed over the furnace, and the coal is sprinkled by means of machinery upon the grates beneath, as grain is regularly discharged from the hopper of a mill. In accomplishing this contrivance, the principal difficulty is to spread the fuel in a regular manner upon the bars of the grate. To effect this object, the bars are arranged in a circular form, like the spokes of a cart wheel turned up horizontally. In this position the whole grate is made to turn slowly around in the furnace by the machinery of the engine; and each portion is brought successively under the hopper, to receive a fresh supply of fuel, and to convey it gradually around to the most intensely ignited part of the furnace. There, all of it is consumed, before the same portion, in the returning revolution, is brought forward under the hopper to be again replenished. The regular attendance of one man is thus saved, and the coals are, at the same time, more regularly distributed over the grates. By the continual addition of fuel, in small quantities, the carbonaceous smoke, which at intervals is seen to pour forth out of the chimney tops of ordinary furnaces, from the imperfect combustion of the freshly supplied, crowded fuel, is by this new contrivance entirely consumed, yielding a profitable heat. The steam engine has thus been made to perform one more important function, and to feed itself

with fuel during its operation, as it had already been made to supply itself with water.

Much fine glass is manufactured in Birmingham. The various operations in one of the largest glass-houses which I visited, appear to be conducted on nearly the same plan as in the United States. The same materials, sand, red lead and potash, are also used. No small share of ingenuity is shown in the remarkable arrangement of mechanism, executed for the benefit of government, to ensure the collection of the heavy excise assessed upon every pound of glass manufactured in the country. It would be an impracticable task for the excise officers to weigh each article, as fast as moulded or blown to the required form, without literally burning their fingers; and before the freshly formed glass can be permitted to cool sufficiently to admit of being handled, it must be annealed, as it is termed, by placing it for a time in a heated oven.—Otherwise, glass ware becomes so brittle, from being suddenly cooled, that it is unfit for most of the uses to which it is destined to be applied. A custom-house officer stood by the furnaces from which the workmen were taking the melted glass, and was regarding the processes for the formation of each tumbler or decanter, with his eyes reddened by the glare of the heat and light. After each article is fashioned by the workmen, he causes it to be placed into large sheet iron pans resting on chains, which extend horizontally through the long annealing oven; and when put in motion they carry forward the pans, filled with articles of glass ware, directly into the room occupied as an office by the exciseman; who thus has complete control over the excisable article from the time the half liquid glowing mass leaves the furnace, until, like pure crystal moulded into various forms, it is produced into the cold air.

One of the wonders of Birmingham is the manufacture



of a pin, which has been often mentioned by writers on political economy to demonstrate the benefits resulting from the subdivision of labor. This simple little article, which occupies so important a station on the toilet of a lady, in the course of its manufacture passes, in detail, through nearly as many hands as the complicated mechanism of the watch. One person is employed to polish the wire; a second, to cut it into suitable pieces, each of the length of two pins; a third person takes several of these pieces between his thumb and fore finger, and applies them to a circular steel grinding-wheel or rasp. The pieces of wire for a dozen or more pins, are thus sharpened at once by the operator, who dexterously causes all of them to turn simultaneously between his thumb and finger; whereby the points are rendered perfectly round and acute. A fourth person divides each of these pieces in the middle to form two pins, and slips on the heads (which are formed by a fifth person,) over the shank of the wire. A sixth person now takes the rudely formed pins, rivets the heads, and passes them to a seventh workman, who whitens them by means of a composition of melted tin. The scouring and brightening or polishing occupies another hand, and the ninth in the series, is busily engaged in sticking the pins into papers for packing. This completes the operation of manufacturing the little article, which for its apparent insignificance, is made the subject of every diminishing comparison; but which, however, in the aggregate amount, forms an important staple article of business, affording employment and the means of subsistence to many hundred persons.\*

An effect even more remarkable than that above described as the result of the wonderful subdivision of labor, I saw accomplished in the manufacture of pins by a single ma-

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\*It appears from a published statement that the quantity of pins made in England has exceeded, in value, \$4,000,000 annually.



chine, constructed by an ingenious American in London. All of these principal operations which have been detailed, except that of tinning and packing the pins, is performed by this machine in a shorter time than I have taken to enumerate the separate processes. Several of the machines may be attended by one boy, who, by this contrivance, is enabled to supersede both the labor and dexterity of many experienced workmen, who may have been engaged all their days in acquiring skill in the practical details of this branch of manufacture. The pins made by machinery may be known readily on examination, as they are headed like cut nails, from the shaft of the metal, and the heads are not therefore liable to be slipped over the body of the pin.

The pins were made rapidly, and were apparently of good quality. Art, here accomplishes, by the aid of inert machinery and steam power, a result which has excited the admiration of the scholar in his closet speculations, as being the wonderful achievement only to be accomplished by the extended subdivision of human skill and labor.

The pin machine does not perform its complicated labors with such rapidity of execution as the nail machine which is also another American invention. The artist has been compelled to imitate in a degree the usual manual process of the manufacture, and to cause his machine to extend its artificial iron hands to hold the point of each pin on a grinding wheel, formed of steel with a surface like that of a file, to produce the sharp point. It was found necessary to employ one of these metallic grinding wheels to file off the superfluous metal to form the point, and another to polish it when ground. To execute this delicate task of holding each pin on two separate grinding wheels, and, at the same instant, to turn the pin on its own axis, as is done between the thumb and finger of the pin grinder, the artist has constructed two pairs of iron hands, which roll the pin between their compressed palms.

One pair closes upon the piece of wire to seize it, at the moment when the other relaxes its grasp, as if they both had an intelligence of each other's motions, and were directed by a consciousness of being engaged in co-operating in the task of making a pin.

The American cut-nail machine, after having been for many years in successful operation in the United States, has been introduced into England. Owing to the strength of old habits and prejudices, the enterprising proprietors met, at first, with very indifferent success. For a time, they went on, in full confidence of an unlimited and ready sale for their cut-nails; but, after the accumulation of a great stock on hand, they were compelled to curtail their operations, finding it easier to make cut-nails, than to make the English carpenters use them. Partly by persuasion, and partly by the gratuitous distribution of small parcels, the carpenters were induced to make the experiment; and it was after a time discovered that cut-nails were actually capable of being employed, in some few cases, as a substitute for wrought nails. One Englishman, with whom I accidentally became a fellow-passenger, obstinately persisted in asserting that the former are not even fit for making boxes, notwithstanding he was informed that they have long been used, almost exclusively, in constructing buildings in the United States. Thus tardily are introduced new contrivances or customs, in a country where all seem well satisfied with those to which they are habituated.

In a manufactory of gilt buttons, the copper plates are placed beneath a sort of press, which punches a round hole, and drives before the round bolt the circular disk of metal that is to form the button. The eye or shank is soldered to one side of the button, and the whole is polished in a lathe. The buttons are gilded by means of gold dissolved in mercury, and formed into an amalgam or sort of paste. This is rubbed over the copper button, many

dozens of which are placed in a heated oven having a flue or pipe leading to a condensing apparatus, fixed on the principle of a still and worm. Mercury, it is well known, boils at a temperature of about 656 degrees of Fahrenheit. When the heat of the oven or furnace is raised above this degree of heat, the mercury evaporates from the surface of the buttons like steam, and is saved by the condensing apparatus for future use. The metallic gold is left adhering and fixed on the surface of the copper. This is afterwards polished, when the gilded button is complete, as it appears shining in all its lustre upon a blue broadcloth coat.

On a subsequent visit to Birmingham, during the summer, I spent a short time in exploring the neighboring region of iron mines. Although they may rarely have attracted the wandering traveller from his course, these mines well deserve the notice of the scientific geologist, who may wish to behold one of the most valuable districts of England, containing mineral riches beneath the soil. The peculiar advantage of this mining region consists in the important facilities of obtaining from the shaft or pit, not only the iron ore to be smelted, but also the very coal required to smelt it. The clay of the adjacent fields is of a suitable quality for forming the fire-bricks, and a neighboring hill furnishes from its quarries the supply of limestone necessary to be mingled in the furnace with the ore and coal to form the flues. To complete the enumeration of the facilities here combined, a navigable canal is constructed to wind, with many sinuosities, among the iron mines, from the gaping mouths of some of which it abruptly turns aside, as if endued with instinctive dread of being engulfed in the dark open abysses. By means of the canal, the heavy mineral products are economically transported to the distant parts of the kingdom. So rich in iron ore is this favored spot, that three or four steam engines are in some

of the fields, collected within a few hundred yards of each other; and are all simultaneously in motion, exerting their power to pump water, and hoist iron stone and coals from the numerous shafts of mines. The value of this region may be inferred from a statement which was made to me of sales of various lots. For the right of mining a single acre of ground, subject to an agreement to return the land at the termination of the mining operations, the sum of £1400 sterling has been paid, equal, at the present rate of exchange, to nearly \$7000 for one acre. A large tract of ninety-five acres was lately contracted for at £1000 sterling per acre, being at the rate of nearly half a million of dollars for an hundred acres of land.\*

The most ample sources of wealth abound in many parts of this small island, and are improved to the best advantage by an enterprising people. One of the iron furnaces lately offered for sale, is valued at £30,000, or nearly \$140,000.† Having the advantage of fine weather, I

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\*These excessive prices proved afterwards to be rather the effect of speculation, than of a fair average value; and expensive lawsuits have been the result of some of these contracts. The prices, however, may serve to indicate the important value attached to the iron mines.

†The following extraordinary statement of the productive value of several of these Iron Furnaces, belonging to a single individual, will show how great a source of national wealth the manufacture of iron has become in this country. The Mechanics' Magazine states, that in Mr. Crawshay's iron works, 5000 persons are employed; annual sum expended for labor, £300,000; number of horses employed, 450; number of steam engines, 8, each of 50 horse power; but, going night and day, they do the work of 12,000 horses; water wheels, 9, equal to the power of 954 horses; annually used for mixing in the furnaces, 90,000 tons of iron stone and 40,000 tons lime stone; 200,000 tons of coals consumed, and 30,000 lbs. of gunpowder; 120 miles of train railways have been laid for the use of these works, besides which, there is a canal of several miles in length, aqueduct bridges, &c. It is further stated, that Mr. Crawshay has lately built a castle for his own residence, in the vicinity of the works, containing 72 apartments; the locks and hinges alone cost £700. There are green-houses for raising pine-apples attached to the castle, heated by steam, and an extensive grapery, each of which costs annually about £800 sterling, (nearly \$4000.)



made a pedestrian excursion over the mining region, to obtain, leisurely, a survey of the operations carried on for raising and smelting the iron ore.

In order to enjoy a general view of the country around Dudley, which is near the great centre of the iron mines, let us ascend one of the towers of Dudley Castle. This interesting ruin stands high on the hill, presenting to those who approach it from the vales adjacent, projecting outlines of wavy and ragged walls, relieved by the dark blue sky beyond them. It being nearly sunset, a band of musicians are in temporary possession of the solitary court of the castle, as if for the purpose of exciting surprising echoes of martial music from the walls of the surrounding towers. The full clear notes of the bugle, rising in swelling sounds, and then subsiding almost imperceptibly until silence again reigns throughout the roofless halls, have here their utmost power in exciting the imagination, until one almost looks around for the ancient warriors clad in steel to rise up at the summons behind the battlements. Whilst the music is still sounding, you look abroad from a commanding pinnacle of the castle over distant vales, and contrast the vast useless structure of baronial magnificence, upon the surviving towers of which you stand, with the more beneficial and equally bold works of the present generation of men, whose labors are devoted to improvements in the useful arts. The tall chimneys of numerous iron furnaces are gilded on one side by the last rays of the setting sun, and long shadows are cast from the opposite sides, over the fields of the valley. The sheds, which partially shelter the boilers and cylinders of the steam engines, are clustered in some of the districts, like rude cottages in a village; but instead of being tenanted by families of the human race, they are solely occupied by the giant of iron sinews, created by man, and laboring for him as his slave. The work-



ing beams, disclosed to view in plain sight beneath the sheds, move up and down in regular vibrations, as if these giants were looking forth from beneath their scanty roofs, and were sociably nodding, each to his neighbor. Broad belts or bands, made by sewing four ropes together side by side, radiate from these engine-houses, as from the heart, to convey the pulsations of the moving power to considerable distances across the fields, to the dark orifices of the mines. The calm waters of the canals intersecting the valley are rippled by the movement of canal boats, which in some places pass with their loads over the heads of the miners in the deep galleries of the mines beneath its bed, leaving the spectator impressed with the conviction, that above ground he sees not one half of the movements of industry that would be revealed, if the bowels of the earth were laid open to his view. Riveted to the spot, one continues gazing at the interesting landscape, even after the declining sun has disappeared, and the gathering shades of twilight have darkened the face of the country, and distant objects have become blended in confused misty outlines. The chimneys of many remote iron-smelting furnaces are now distinctly to be seen. The fires which spout upwards from their tops are no longer rendered comparatively dim by the brighter glare of sunshine. As the obscurity increases, these fires all begin to brighten to the view, and when the darkness finally prevails, the lights resemble stars reflected from the surface of a dark lake spread out before you. It may be imagined that they resemble light-houses, some near at hand, and others gleaming faintly on the remote verge of the horizon. In addition to the fires of the furnaces, the countless heaps of blazing coals, ignited for the purpose of being reduced to coke,\* flash up at

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\* The coke used for smelting iron ore is frequently prepared from the bituminous coal on the spot near the mine from whence it is raised. The heap of coal, which is to be converted into coke, is set on fire in the open

intervals over the adjacent fields, like the burning of frequent brush heaps in the clearing of a forest. All of these fires pour forth such a flood of light as actually to tinge the borders of the overhanging clouds with streaks and fringes of red, like the reflection of the fearful ruddy glare of a conflagration. Those may imagine the appearance, who may have witnessed a forest on fire in the United States, after the first rush of flame has swept over the dry leaves, when the blackened tract appears dotted with spots of fire, wherever a dry hollow tree, or a fallen trunk, furnishes fuel upon which the devouring element fastens and lingers, until the whole is consumed. The stranger cannot but silently acknowledge, whilst gazing at all these works, that the enterprise of the people who are achieving such wonderful triumphs in the useful arts, renders them worthy of the bountiful land in which they dwell.

Staffordshire is one of the richest counties of England, as well for the mineral treasures contained in the earth as for the green pastures and fertile fields, which adorn its surface. In one part of Staffordshire is found the finest clay suitable for the supply of the immense potteries, which furnish whole nations with ware for their tables. From

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air, and is left to burn until the blazing particles are consumed in wreaths of flame, leaving a mass of red glowing coals, with a lambent blaze quivering fitfully over the top of it. In this state the fire is extinguished by a covering of sods, and by the application of water. The pit coal is diminished about one third in weight by the process of coking, and but very little if any in bulk, the texture becoming porous like pumice stone. Coke was first successfully used on a large scale, as a substitute for charcoal in smelting iron ore, in 1788. It burns without flame, like the anthracite coal. Experiments made in the United States in smelting iron ore by means of coke, it appears from a document lately published, have not been attended with the desired success; but charcoal is very generally employed for this purpose. The quality of iron produced by this latter species of fuel is commonly found to be much superior to that made by the use of coke.

these mines, iron is extracted in abundance, not only for the hardware and cutlery of Birmingham, but for exportation. In the adjacent county of Cheshire, are mines of solid salt, sufficient for the supply of all the nations of the world, for ages; and in another portion of the English territory are found the fine slates, which are transported to nearly all quarters of the globe for covering roofs. The quarries of freestone abounding in various parts of England furnish a most useful building material, equally adapted for the economical construction of the cottage and the palace. Mines of copper, tin, and lead are also found in abundance, and all these natural advantages are improved to the utmost by means of excellent roads, railways and canals, which like a net work overspread and connect all parts of the country. But, above all, the coal mines have proved a principal source of the unexampled prosperity of England. These mines, or coal fields as they are termed, are so distributed over the island, that nearly every portion has a cheap and ready supply.

The products of the coal mines in the hands of Englishmen are of far more value than those of silver and gold; as they are applicable to so many useful purposes, to meet the wants of society. Like the Genius of the lamp in the stories of Eastern romance, coal is resorted to for performing numerous useful services. It puts in motion the mechanism of the steam engine, and causes it to perform labors almost incredible. Whilst it imparts warmth to the domestic circle, with its brilliant light it supersedes the lamp in rendering the fireside cheerful, and it even dispels the gloom of the pathway of the public streets. It is a useful agent abroad as well as at home, and is the source of the moving power which transports the traveller over rail roads on the land, and over tempestuous waves and adverse tides on the ocean. It furnishes tar as well as freights for ships. Almost every mechanical business in

which power is required, is here indebted to its agency, for putting in motion the numerous engines, with which England abounds: nor is its use confined to the sooty furnace. It is even wrought into polished ornaments of jet, producing a flattering contrast by its sable lustre when displayed upon the snow-white bosoms of the fair.

Within the United States are found, comparatively, all the natural advantages, except perhaps tin mines, which are enjoyed by the inhabitants of England; but these advantages are distributed over vast sections of territory, divided from each other by mountains and inland seas; as if it were the intention of Providence that the most distant regions of this great republic should be bound to each other, not less by the interchange of their staple products, than by the reciprocation of courteous and friendly offices. One portion of the United States produces cotton and the sugar cane; another produces wheat, wool and cattle; still another section abounds with waterfalls, and is inhabited by a laborious and energetic people, well prepared by their enterprise and intelligence to avail themselves of the vast natural moving power placed within their control; whilst a rock-bound, ungrateful soil leaves them no other resource than that of manufacturing industry.—Even the long cold winters contribute to promote this industry, by rendering unceasing labor necessary to a comfortable existence. The climates of the United States are colder than those of similar parallels of latitude in Europe. This seemingly untoward circumstance may probably be considered a blessing; for it contributes to preserve a people industrious and virtuous, and capable of maintaining unimpaired their rights. Idleness and vice, being usually found in company, are become almost synonymous terms. Were either England or the United States favoured with the mild skies of an Italian climate, their hardy yeomanry would be found relaxed and effem-



inate; disposed rather to bask in the sunshine like the Lazzaroni of Naples, than to endeavor by continued labor to provide against inclement seasons. It has frequently been observed that a population compelled to labor for a bare subsistence for nine months is rarely found to remit its exertions during the remainder of the year, whilst they are occupants of an unproductive soil, and visited at times with the cold Siberian winters. No portion of the population of the globe enjoys more of the comforts and common luxuries of life, diffused throughout all ranks, than the inhabitants of New-England.

In the agricultural productions of warm latitudes, the United States possess advantages superior to those enjoyed by England. The summer heat of England is not so intense as that of all parts of the United States, and is not indeed sufficient in ordinary seasons to mature the Indian corn. This advantage of climate, in the estimation of an Englishman, would perhaps, scarcely be considered an equivalent for the personal inconvenience arising from the fervent heats and more dangerous fevers consequent upon warmer climates than his own. From the concentration of so many advantages of nature and improvements of art within the range of a few hours travel, the stranger in England is remarkably impressed with the spectacle of the wealth and resources of this little island, which physically and intellectually exercises more important influence on the destinies of civilized man than one whole continent.

During this rambling digression, the reader may have forgotten where we last parted company; or it may be necessary to give him a friendly jog, to rouse him from slumber whilst his guide has been prosing. After getting safely down from the airy pinnacles of Dudley Castle from whence we have been looking at the beautiful and interesting country around this spot, we will descend to the foot of the hill, and enter the dark cavernous excava-



tions formed beneath the very foundations of the castle itself. The openings in the earth at the base of the hill, from whence the limestone is extracted, are so large as to resemble the mouths of natural caverns, into one of which a navigable canal enters, like some huge water snake, with its far extending writhing body half hid in the hole of its lair. In the dark caverns of the tunnel, the canal becomes lost to sight. Stepping into one of the empty canal boats just entering to bring forth to the day-light a cargo of limestone, I found the heart of the hill to be perforated by passages and excavations, like the devious subterranean paths of an anthill. The substratum of the whole hill appears to be composed entirely of limestone, and so many cargoes have been taken away during the lapse of years for supplying the great and constant consumption of this necessary flux for melting the ore, as well as for the use of the lime burners of the adjacent thickly populated country, that caverns of vast dimensions have been artificially formed, some of them resembling the celebrated natural caverns of the Peak of Derbyshire. The limestone is loosened from its bed by explosions of gunpowder, the sounds of which, as is usual in subterraneous works, burst on the ear of the startled visitor like the peal of thunder from an evening cloud; but, instead of passing away with few echoes, as in the open air above ground, these peals are confined by the walls of rocks, and almost do violence to the organs of hearing by their stunning reverberations. After the noise of the first explosion has passed off from the immediate cavern in which it takes place, it may be heard distinctly to send back numerous echoes, as if bellowing through successive windings of the distant cavernous passages. These reverberations, growing fainter and fainter, gradually cease and all becomes quiet; when the voices of the miners, and the strokes of steel pikes are again heard.

Each one of the canal boats carries out about 20 tons of limestone, which, according to the statement of one of the boatmen, is delivered into the canal boats at four shillings and sixpence per ton, (about one dollar and ten cents.) The miners earn about 80 cents per day.

Lord Dudley owns this most valuable quarry, and also numerous coal and iron mines of the adjacent lands, the income from which, as an English gentleman informed me, is nearly equal to the revenue of some of the South American States. He observed, that although this nobleman is a bachelor, his income has proved inadequate to maintain profuse habits of expenditure and of dissipation, which, notwithstanding all his wealth, are said at times to involve him in pecuniary embarrassments; so true is the Dutch proverb, that a man's thrift is not measured by his income, but by his comparative expenditures. A Dutchman himself, on his native marshes, obliged to pump for his life to free his paternal acres of the springs of water forever gushing up out of the cold soil, whercon he stands with his feet below the level of the ocean-waves and his head enveloped by ocean fogs, always contrives to preserve the midway region of his pockets well stored with coin to keep off the fits of melancholy, which sometimes cause an Englishman to hang himself in the gloomy month of November.

Following the course of the canal after it emerges from beneath the hill, you soon find yourself among the coal fields and iron furnaces of the Valley. A volcanic region now presents itself to view. The mounds of scoriae or melted slags, ashes, and coal rubbish, so completely overlay the natural turf, that the herbage is destroyed, or luxuriates only in green patches. All the refuse materials, rejected as unfit for useful purposes after being drawn up from the depths of the mines, are left to encumber the surface of the ground.

When the old pits are abandoned, their mouths are left uncovered ; and as you proceed, gazing at the novel scene around you, a dark, and apparently fathomless hole, like the yawning aperture of a well, occasionally arrests your footsteps and produces a thrill of horror at the moment you start back from the brink. Around the mouth of several of the iron mines there were two or three stout women, who emptied the buckets of fossils as fast as they were hoisted up by the steam engines from the bottom of each of the shafts to the surface of the ground. Each bucket or tub frequently contains several hundred pounds weight of minerals or rubbish, and their labor is consequently almost too severe for female strength to perform. They seemed, however, diligent and cheerful in accomplishing their hard work, for which they told me they received 2s. per day, about 48 cents. The colliers or miners work in the deep recesses of the mines about ten hours per day, for which they are paid about 4s. or 96 cents for each day's labor. The price of common coals is here 8 or 9s. a ton, and the best kind in cubical lumps is worth from 10 to 12s. a ton.

There are two sorts of iron furnaces—one for smelting the ore and producing cast iron ; and the other for converting the cast iron into malleable or bar iron. To reduce cast iron to the malleable state, it is melted to a semi-fluid mass, and is then subjected to the action of heavy hammers, until it acquires a proper degree of consistency. It is afterwards passed between rollers to elongate it into bars. These bars are moulded to a square form by passing between rollers having a wedge-shaped groove formed in each. The upper roller thus gives a shape to two sides of the square bar, and the lower roller to the remaining two sides. To form a round bar, the rollers have each a semi-circular groove, exactly adapted to each other. The

bar of iron is drawn into the grooves, and is compressed between them, and passes out completely rounded.

From one of the furnaces, at which I stopped, it was stated to me that eighty tons of iron had been obtained in one week.\* About eighty-five tons of ore, coke, and other materials are daily thrown into the all-devouring, insatiable mouth of a furnace; and what is surprising, above fourteen tons of heavy mineral substances are there converted daily into "thin air," or gases, by the intense heat.

The great amount of labor required to make one ton of iron may be readily inferred from a statement of a few particulars of the operation.

To produce one ton of Iron, are required

3 tons of Iron Ore,

4 tons of Pit Coal,

1 ton of Lime Stone.

The three tons of iron stone are to be excavated at a depth of two or three hundred feet below the surface of the earth, from narrow seams or veins, by the force of powder, and by the steel point of the pick, to swing which, with full effect, the miners are frequently compelled to recline on their sides upon the hard bed of rocks. Four tons of coal are not only to be raised from the mines, but are also to be coked with no inconsiderable labor. In addition, a great quantity of refuse stones and rubbish is to be raised from the lowest depths of the shafts, for each ton of pure ore and coals obtained. Thus, the products of the iron mines, like those of agriculture, are obtained only by dint of persevering labor.

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\*I find it stated by an English writer, that there were in 1827, 284 high iron furnaces in England, Scotland and Wales, which produced 690,000 tons of iron, being above four fold the quantity produced in the United States. Ninety-five of these furnaces are in this neighborhood, and ninety in Wales. It appears from calculations made by a committee in a Report upon the subject of the production of iron, that in 1831, about 163,000 tons of iron were made in the United States.



It is in the ready supply of fuel that the principal advantage of working the English iron mines consists, compared with those of most other countries. Throughout the United States, charcoal is commonly used as a substitute for the coked mineral coal, at a greatly augmented expense. The product of malleable iron from charcoal, however, is generally superior to that produced from mineral coal. To this may be attributed the superior tenacity of the American iron compared with that made in England by means of coke. For the manufacture of steel, it is even found necessary to import into England Swedish iron, made by charcoal; as confessedly superior to any that is here made from coke. The use of mineral coal in the manufacture of iron was once considered as an important discovery—probably in the same manner as the use of anthracite coal for this important purpose would now be considered in the United States. The iron stone or iron ore, is first prepared by being calcined, or roasted, as it is termed, to reduce it to a pulverised state by the action of heat. It is then thrown into the top of the ever open mouth of the furnace, mingled with coal and lime stone in proper proportions. The lime stone combines with the iron stone as a flux; and forms a sort of semi-fluid glass, whilst the iron, rendered fluid at the same time by the intense heat, is set at liberty, and subsides into the bottom of the furnace, from which it is occasionally drawn out through a tap hole, for which a piece of clay serves as a tap. The metal flows like melted lava, first into a broad deep channel moulded in the sand to receive it; and from thence it diverges and flows into numerous smaller channels, arranged regularly at right angles on each side of the main one. When the iron was originally cast in this form, the workmen regarded the great central channel of molten metal as bearing a resemblance to a sow extended at length; and the smaller channels filled with metal on



each side of the large one, they fancied to bear also some similitude to a litter of sucking pigs. Hence they quaintly termed these ingots "pig iron." After the melted iron has been drawn out from the pool at the bottom of the furnace, the iron stone and lime stone in a state of melted glass, flow out from the same aperture. Without stopping or cooling the furnace, the great bellows are made to resume their labors, and the operation is repeated.

The iron furnaces are all constructed on the plain level fields, and not on the edge of a bluff, as is common in the United States, in order to facilitate the conveyance of the mineral materials by a cart to the verge of the mouth of the furnace, into which they are to be projected. Here it is necessary to elevate the ore and coals to the top of the furnace by wagons upon the slope of an inclined plane or railroad, by the same steam engine which is employed to operate the bellows. The ore and coal, after being drawn up to the top, are discharged by the machinery at once into the frightful cavity of the furnace, which belches forth flames continually. A workman once accidentally became entangled in some part of the machinery of one of these wagons, and was precipitated with the contents of it into this red hot crater, and disappeared with a shriek amid the billows of flame. So completely was he consumed, that not a bone or other vestige was ever found.

Instead of bellows of the ordinary form, cast iron cylinders, larger than those of steam engines, and similarly furnished with a working piston, are used to create the blast of air, which is propelled into the glowing furnace through pipes, with a roaring sound, audible at a considerable distance, and truly resembling the noise of a "rushing mighty wind."

After roaming over this interesting district of country, at the approach of evening I directed my weary steps to the principal hotel in Wolverhampton, a consider-

able town, supported by the trade in iron. Presenting myself, however, on foot, sprinkled with the dust that usually falls to the lot of a pedestrian, and without baggage, my appearance was scanned by the waiters, and the probability of my proving a profitable customer was hesitatingly considered by them for a moment. After having been weighed in their ready balances and found wanting, admittance was refused; and I was glad to gain shelter for the night in a humble inn in the outskirts of the town. There is no medium between the overbearing insolence and fawning obsequiousness of the servants of most of the English hotels. They seem like Sir Archy Mac Sycophant, never to stand straight before a great man, and never to waste civilities on a poor one. Here the stranger feels that there is much to compensate for the extremely independent, but calmly respectful deportment of the landlord of an American hotel, whose sturdy republican notions commonly prompt him to be civil and attentive to all decently dressed guests, and cringingly subservient to none.

The country between Birmingham and Warwick is fertile and well cultivated, affording pleasing indications of an improved state of agriculture. Indeed, a traveller through most of the counties of England can hardly fail to be pleased with the prospects of well tilled fields, which continually meet his view. A no less pleasing spectacle is afforded by the village population of Warwick, moving, as if with one accord, toward the old Gothic church;—all neatly attired, and each female bearing a prayer book, the bright colored binding of which forms a conspicuous contrast with the snow-white folds of the handkerchief which partially envelops and conceals it. After the conclusion of the church service, under the guidance of the old sexton, I entered a sort of mausoleum or chapel, forming a wing of the church; the stone floor of which is

nearly covered by monuments commemorating the names and titles of some of the ancient noble families who have lived and died in this vicinity. The complete figures of armed warriors, and of ladies, attired in frills and furbelows, all beautifully sculptured in marble, are extended, at full length upon the slabs of stone. Their faces are turned upward, and their hands are raised, and clasped above their breasts, as if in the motionless attitude of silent prayer. The very ruffs and flounces, and other fashions of dress of former ages, are preserved with rare nicety of outline, by the faithful touches of the chisel ; and the sculptured pillows, which sustain the slightly raised heads, apparently yield to the incumbent pressure, as if filled with pliant down.

The sexton pointed out a tombstone, which he said covered the remains of the Earl of Leicester, once the master of the castle of Kenilworth, situated only a few miles distant. The roof of this mausoleum is decorated with gilding, and painted with lines of red and of other bright colors. When the eye is raised to gaze at the vaulted arches, the spectator may imagine himself to be in a saloon gaily decorated for the dance and the feast ; but when the eye falls on the motionless statues which lie strewn about on the marble tombs, a chilling sensation is produced by the spectacle of blanched cold sepulchral figures, instead of the bright eyes and warm tints of beauty.

On strolling through the churchyard adjacent, the turfs of the newly made graves appeared bound down by long slips or branches of rose bushes and osiers, interlaced to form a sort of trellice work over each narrow mound. This custom must have long prevailed, for it is mentioned by old English writers as being the usual tribute of the poor, who decked the sods which covered the remains of departed friends, and moistened them with a tear whilst performing over them their humble task ; as if, like the

widow's mite, this were all the offering they had in their power to bestow. To the eye of the passing traveller, this perishable memorial affords a more touching proof of human friendship than the costly sculpture of the brass and marble beneath the roof of the adjacent church. Parnell in his glowing verse thus describes this custom.

“Those graves with bending osier bound,  
That nameless heave the crumbled ground,  
Quick to the glancing thought disclose  
Where toil and poverty repose.”

And that prince of accurate observers, Jeremy Taylor, notes the custom in his peculiarly quaint manner. “The autumn with its fruits provides disorders for us, and the winter's cold turns them into sharp diseases, and the spring brings green flowers to strew our hearse, and the summer gives green turf and brambles to bind upon our graves.”

The exterior surface of the windows of the church is covered by a wire net or screen, to protect the stained glass from being broken by the pebble of the school boy, or by storms of hail.

Warwick, although an ancient town, is scarcely larger than some village of two or three years growth in the United States. The buildings, indeed, look so old, that a stranger may suppose the place to be going to decay. This circumstance often presents a subject of contrast to an American, accustomed to view the freshness of new villages, built up by a rapidly augmenting population.

At the distance of two miles from Warwick is the village of Leamington, a fashionable watering place. Here are two or three saline springs, the waters of which are supposed to possess medicinal qualities. This pretty town is adorned with lofty trees, which invite one to walk beneath the shade of their interlaced branches. A theatre and several public baths offer their attractions to a resi-



dent. Some of the houses have small patches of ground in front of them, planted with evergreens and creeping vines, which send up their branches as if to repay with the freshness of their verdure and fragrance, the cares of those by whose labor they may have been planted. The landlords calculate, as a matter of profit, thus to render their houses attractive to the fashionable visitants who resort to Leamington; from whom they obtain a liberal remuneration in enhanced rents for these agreeable yet cheap decorations.

At Warwick is the celebrated Castle of the same name. It was one of the few spared by Cromwell, when Kenilworth was reduced to ruins. It has since been carefully preserved by the wealthy proprietors, nearly in the same state as to interior and exterior, as when it existed in the feudal ages. Guy, earl of Warwick, once possessed this castle whilst the fate of kings, suspended on a vibrating balance during the civil wars, was decided by the overwhelming aid of his numerous vassals in arms. Having in this way been instrumental in setting up and dethroning monarchs of his time, he was called "the king maker." The face of the stone masonry of the walls and towers, which have been erected several centuries, still appears fresh and uninjured by time. Attention has been readily bestowed in replacing every crumbling stone. Warwick Castle is situated upon an elevated rock, and its lofty towers and battlements make an imposing appearance, rising far above the tops of the trees which shade its base. The river Avon flows in front of the castle walls, beneath the broken arches of an ancient bridge, near which it is whitened into foam by the fall of its waters against the open wheel of a corn mill. The entrance to the castle is effected by a passage way cut through the rock to a great gateway, flanked with towers and pierced with numerous loopholes for archery. Beneath the arched passage of the



gateway the ponderous portcullis swings suspended over head, ready to be dropped, as in former days, to close the passage.

In a large court yard we found a garrulous old housekeeper prepared to conduct a party of gentlemen over the various apartments of the castle. A large hall is first exhibited, wainscotted with huge pannels of oak, against which are suspended antlers of bucks and other trophies of the chase, coats of mail, and various kinds of ancient steel armour. On the hearth of the old fashioned fire place some logs of wood were blazing, which serve to keep up the illusion that every thing is preserved as in the feudal ages. In no other apartment in England have I seen the blaze of a wood fire. The next room shown us was called by the housekeeper Queen Ann's room, from its having been once honored by the presence of that queen during a royal slumber. The drapery of the bed, faded and discolored by the dust of ages, attested the antiquity of its fabric, and corroborated all the old lady had to tell about it. After strolling over various apartments fitted up with tapestry and costly ancient furniture, and viewing a chapel enclosed within the castle walls, of dimensions equal to some of the meeting houses of the United States, we were dismissed at the door by the housekeeper, who received her fees with a smile which betrayed no unhappiness at parting.

So numerous are the visitors who are constantly arriving to view the castle, thus kept in order for show, that the fees paid to the servants amount to a considerable sum in the course of each year. The landlord of the inn informed me on my return, that the old house keeper had accumulated, in this way, above ten thousand pounds.

The gardener stood ready, on our leaving the castle, to conduct us over his department of the exhibition, and for this service he also collects a toll. This sight-seeing, thus

becomes a regular source of business and income to the superannuated or favorite servants of noblemen, who have fine pictures, or grounds, or houses, which the public may feel a curiosity to examine. The proprietors are quite as much disposed liberally to exhibit their splendid paintings, parks and pleasure grounds for public admiration; as the public are to admire them.

The shaded walks beneath fine trees upon the banks of the river Avon, with seats distributed at the most commanding points for affording favorable views of the scenery, often tempt the visitor to recline a few moments, to contemplate the grey battlements and towers above him. One of the trees was deeply scored with a pocket knife, an implement which many Americans from habit have constantly in their hands when unemployed, and use too freely to make a perishable record of their names. The wounded bark was inscribed in neatly sculptured letters with the name and place of residence of a fellow-countryman. The sight of the word, "New-York" recalled at once my thoughts from the scene before me, like a talismanic charm, and directed them with quickened animation to the land where there are no castles, and where none are born with exalted titles to inherit them.

A geranium, which under the fostering care of the old gardener has acquired the size of a tree, occupies a considerable part of one of the green houses; and a large marble vase, twenty-one feet in circumference, imported at a great expense from Italy, occupies another apartment. The word vase was pronounced here as if spelt *vawse*, giving the honest English word an Italian sound. No one of the party was able to conjecture what object of curiosity we were about to behold, until the huge outlines of this useless sculptured piece of marble were actually in full view.

At the porter's lodge near the gate of entrance, a pon-

derous two-handed sword was put into my hands. To flourish it with effect, the strength of four hands would hardly have been adequate, as it moved in its orbit like a sledge hammer. Several articles of old cankered armor of unwieldy magnitude, were also displayed, which, as described by our guide, were worn by Guy, earl of Warwick. He was considered one of the strongest men of the age in which he lived, and he was one of the most renowned. His fame must have been transmitted by tradition to the descendants of the Pilgrims, as the very urchins, in their sports amid the New-England forests, may sometimes be heard to invoke unconsciously his name, and exclaim, "by Guy."

The Castle of Kenilworth, situated seven or eight miles from Warwick, was famous in ancient times for its strength and massy grandeur. In modern times, its ruins are rendered interesting by tales descriptive of its "old renown," as conjured up by the magic pen of the novelist. The ruins are in the vicinity of a few straggling houses, which form the present village of Kenilworth. Alighting at this village, and ascending a hill on the way to the castle, the hurrying footsteps of the traveller are suddenly arrested when the vast ruins first burst upon his sight. He stops to gaze in mute wonder at roofless towers, and battlements, and long lines of broken walls, stretching away to a distance, and in their returning circuit enclosing many acres of ground. Half filled ditches and level terraces appear at the base of some of the towers; and over their tops the ivy is mantled so densely as almost to cover up a portion of the walls with green leaves. Flights of rooks are discernible even from a remote distance, hovering above the ruins, and filling the air with innumerable black specks. Some of the towers, in their present dilapidated condition, are 60 or 80 feet high; and the walls are, in some places, 12 or 15 feet thick.

An old feudal chieftain must have felt himself in very comfortable security when he mounted one of these towers, and surveyed fortifications like these, which were almost impregnable against the weapons of ancient warfare. But when, in after times, such a feudal lord beheld the newly invented bomb-shell sweeping in its orbit with a fiery train, like a meteor gliding through the air and descending upon the unprotected roofs of his towers, crushing the rafters and beams, and penetrating to the lowest vault of the dungeons beneath them, he must have felt that he had trusted in vain to the walls of his fortress. Cromwell took Kenilworth Castle, during his wars, and demolished the ramparts which had resisted his forces; as he also did those of most of the strong castles in which the powerful noblemen of the kingdom had taken refuge during that revolutionary period. None of the wood work is left, and even the very stones are in many places crumbled away. A sufficient number of the spiral stone steps remain to afford the means of climbing to the tops of the towers. Some of the sculptured cornices and mouldings, sheltered from the decomposing action of rains and frosts, still retain their angles as sharp and perfect as when completed by the chisel.

One of the most remarkable appendages to English ruins is the ivy, which is always carefully planted as an appropriate ornament to decorate them.\* The broad sheets of the evergreen foliage overspread the tops of the

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\* The height and extent to which the rambling branches of English Ivy spread, and the quantity of green foliage they bear, surprise an American, who commonly for the first time beholds this plant vegetating on the English soil. It grows luxuriantly when planted in New-England; but the severe frosts of winter frequently destroy the branches, and sometimes kill the plant, unless protected in its early growth until it attains sufficient size to withstand extreme cold. It bears some resemblance to the poisonous ivy which is commonly attached to the trunks and limbs of American forest trees.



towers, and hang down upon the sides of the walls, like vast green cloaks, almost screening the brown stones from sight.

After examining these stupendous ruins, the stranger feels disposed to compare the desolate scene with that which this spot once presented to view. Even whilst stepping over the fragments of the fallen arches of the once magnificent halls, he pauses to reflect how often they have re-echoed to the "joyous rout and revelry." No sounds now interrupt the silence, except when the presence of a stranger, exploring the ruins, alarms the colonies of rooks, who flutter around the pinnacles in which they have built their nests, cawing as if to express their anger at such unwelcome intrusions. After having read Scott's tale of Kenilworth, the visitant is well prepared to contrast the present gloomy piles of ruins, solitary, and crumbling into dust, with the lofty and grand structures which met the eye, when the castle was in the freshness of its splendor and renown; when a powerful nobleman received the queen of England with all the pomp and show suitable "for such a great event." It was then filled with armed men, and its halls were crowded by the gay followers of the court of Queen Elizabeth, as described in the tale of Kenilworth. Then Amy Robsart first beheld "its tall towers rising from within a long line of sweeping walls, ornamented with battlements and turrets at every point of defence, with many a banner streaming from the walls, and such a bustle of gay crests and waving plumes disposed on the terraces and battlements, and at the gorgeous scene, her heart, unaccustomed to such splendor, sank within her."

Such a contrast, produced by the change from the state of a once powerful fortress, filled with armed men and feudal chieftains, and the gay followers of a royal court, to the condition of piles of inhospitable rubbish, surrounded by grass apparently untrodden by the foot of



man,—a solitary place in the midst of a land where all else is full of life and active enterprise, is a proof of the changeable destiny of the greatest works of man, too impressive to be unheeded by the most thoughtless. It is indeed difficult, by description, to excite those emotions, which even a single moss covered stone, furrowed by the storms of ages in an ancient ruin, readily calls forth. Kenilworth is still

“Magnificently great. Even in decay  
And desolation, beauty still is thine;  
As the rich sunset of an autumn day,  
When gorgeous clouds in glorious hues combine,  
To render homage to its slow decline,  
Is most majestic in its parting hour.”

An American feels a strong interest, bordering on romantic excitement, when he views for the first time these vast ruins of structures which were erected before his native country was inhabited by a white man. Except the green turf covered hillocks or mounds of the Indians, there are in the United States no works, which have existed longer than about two hundred years. A friend of mine, whilst taking some lessons in the Italian language, at Rome, accidentally opened an American newspaper containing an account of the discovery of a grave stone of one of the Pilgrims at Plymouth in Massachusetts, which bore the date “1636.” The paragraph being designated by the word, ANTIQUITIES, in capitals, attracted the attention of his Italian instructor, who observed, smiling, that nearly every house then in sight from their window had been constructed at an earlier period than this fragment of American Antiquities. It is common in every English village to behold buildings constructed at a period antecedent to that of the departure of the emigrants who founded the new country, which now contains almost as many inhabitants as that from which they departed as a few solitary adventurers.

The Americans have evinced their taste for the inves-

tigation of ancient works by researches into the Indian mounds ; and still further by their successful zeal for effecting discoveries of the mammoth bones, which are truly relics of ancient animals, to which astonished Europeans can assign neither date nor origin. The ruins of a stone windmill on Rhode Island, about a century and an half old, have also been subjected to antiquarian research, and have already formed a theme for discussion in newspapers and for the pens of two or three poets.

The land which borders the road between Warwick and Woodstock, a distance of about 40 miles, is hilly and well adapted for sheep. Early in the season they derive most of their nourishment from gnawing the turnips which survive the winter in the open fields, with their bulbs accessible above the surface of the soil. The turnip fields are divided by light portable fences, and the sheep are allowed to remain in one portion during a sufficient period to consume the whole crop, before the fences are removed to a fresh section. The roots of this vegetable, to which their teeth are unable to penetrate, are dug up with a spade, and left exposed for the sheep to finish the work they have begun. The cows grazing in the fields are almost uniformly of a red or dun color, mottled with white spots, or with white streaks upon their backs. The English cows possess fine forms, generally of that peculiar mould which indicates them distinctly to be of one of the improved breeds of that useful animal, which has been introduced into the United States.

Pipes made of two semi-cylindrical pieces of baked clay, and loosely adapted together to allow the superfluous water to enter between the seams or open joints, appear in common use to drain the fields ; and to further obviate the injurious effects of stagnant water on low land, the fields are cultivated or laid down in ridges.

On passing through Banbury, I could not forbear ma-

king inquiries for the Cross, so familiarly known by the jingle of nursery rhyme to every youthful rider, who makes his first journey on the jackhorse represented by the paternal knee, "to Banbury cross to see what little Tommy can buy;" with the prospect of lots of pies to crown his enjoyments in this land of promise. More philosophical hobbies are now mounted by children, in the march of improvement, and the ditties of Mother Goose and nursery rhymes are yielding to grave studies, and scientific play things.

The principal object, which attracts the traveller to the small village of Woodstock, is the splendid edifice erected at the expense of the British nation, as a present to the duke of Marlborough. To perpetuate the memory of the battle which prompted this munificent donation, the edifice was named "Blenheim House," in honor of one of the most brilliant victories won by that famous old general. The gardens and pleasure grounds occupy above two hundred acres, and the park is several miles in circuit. This magnificent requital for leading the armies of England in the profitless continental wars of Queen Anne, is said in the end to have proved a costly one, on account of the extravagant expenditures for embellishment, to which it subsequently subjected the duke. The tenure by which the duke of Marlborough holds the manor of Woodstock is the presentation of a little flag, embroidered with fleur de lis, on a specified day in every year, at the royal residence at Windsor Castle.

After entering the lofty gate, there was soon at my elbow one of the servants dressed in scarlet livery, who offered his services as a guide to show the grounds. Drilled by long habit to perform his task with true military precision, he points out the varied beauties of this improved estate. He describes the architecture of the front of Blenheim House, extending three hundred and fifty feet, in

various irregular shapes, connected together in the semi-circular form of a crescent, and composed of towers, porticos and pilasters, jumbled together. He requests you to pause to admire a small artificial lake, (i. e. a small pond) over the mirror-like surface of which, stately swans glide along, alarmed at the approach of a stranger, and leaving in their track a wake diverging like the wings of a harrow, and extending far behind them in such gentle undulations, that the reflected images of the adjacent shores seem to bow and dance, and for a moment to remain broken whilst they sail along. The swans pass on beneath the arch of a hewn stone bridge, on which the eyes are insensibly turned in admiration of its bold and graceful proportions. One of the arches is of more than one hundred feet span. The guide whispers, whilst you are regarding it, that the famous bridge of the Rialto at Venice, formed the model from which the plan of this was copied. This artificial pond was in the first instance made at a great expense to ornament the landscape; and the costly useless bridge was afterwards made to ornament the pond. Whilst walking in the park, we passed through herds of deer, who seemed scarcely to notice our approach, and continued grazing in a manner as tame and spiritless as sheep on the green slope of a pasture. Very little timidity was evinced by some of the bucks, who looked at me so sternly, that probably all the alarm excited was on my side.

The venerable old oaks in the parks, planted nearly two centuries ago, have attained to a great height, and spread their sturdy branches abroad with a sort of stately pride. They rival, in magnitude, the native oaks of the western states; but being set out in rows, at regular distances from each other, they have as formal an appearance as the trees of an orchard. They are not planted sufficiently near each other to intermingle their branches,



and to create beneath them the twilight gloom and shade which in summer prevails beneath the forests of Ohio and Kentucky, even whilst a meridian sun may be shining brightly upon their tops. Many of the native forests of the west which I have traversed are as free from underbrush or bushes as this park; and the great trunks there stand like perpendicular columns fixed on the smooth turf to support the dense masses of overshadowing foliage.

The aviaries, formed like small houses with sides composed of open wire work, contain birds of bright and curious plumage. They flutter from spray to spray upon the branches of the small trees, planted in a portion of the inclosure, or inclined through the meshes of the wires; and sing with as much animation as if enjoying unrestricted flight beneath their native skies.

The American holly, or *Rhododendron*, is a favorite shrub in the English gardens. This beautiful plant, like most other domestic productions, seems to be held in little estimation in the United States. It is rarely introduced there as the pride of the garden, but is left in its native swamps,

“To blush unseen,  
And waste its sweetness on the desert air.”

The present duke, to relieve some of his immediate pecuniary wants, continued to cut down and sell many of the fine oaks upon this reversionary and entailed estate, until prevented by the public notice which was taken of his proceedings. The guide does not hesitate to narrate, among other wonders, the daily perplexities of the nobleman whose livery he wears. A nobleman in England is not subjected to arrest and imprisonment for debt; and nearly all the estates of noble families are so tied up by entailments and reversionary interests, that some of the nobility have perhaps no other property of which they can dispose, or which can be taken from them by the course of



law, than their furniture and a life interest in the estates of which they are in possession. The sheriff, however, enters the house, and fixes himself there, taking possession of whatever personal property he may find. The butts of port wine are drawn upon for discharging the debts as far as their contents will go, and the officers prowl about the house for every thing else portable which they can attach to satisfy an execution. The proprietor of one of these splendid mansions may be the object of envy to the thoughtless traveller, who views their proud walls aspiring above sequestered groves, as he is hurried rapidly past them in the public coach. But from profuse habits of living, a nobleman may be sometimes almost as unhappily situated as Sancho Panza in the possession of his government. The wand of the tipstaff, quite as potent and magical in its effects as that of Sancho's physician, causes the silver plate, if not the viands they contain, to disappear from the table. To explain little vexations of this sort, originating from vulgar tradesmen who uncourteously insist on being paid, it is said to be a proverbial expression of noblemen to state they have "one or two sheriff's officers in the house."

When about to leave the gate, an old lady, who occupied a lodge near it, invited me to view a collection of most splendid China vases, and other productions from oriental potteries. This frail collection of earthenware, it seems, forms another part of the shows of Blenheim. Here are arranged for exhibition, on shelves like those of a museum, a strange collection of odd teapots of high and low degree; tea cups of the size of a nut shell and bowls of stately swelling dimensions, that might have accommodated the "three wise men of Gotham:" There is here indeed a collection of every thing in the form of China ware of the most antiquated, fantastic moulds, which a wayward caprice by the aid of money could assemble together in

the course of a life busily engaged in this single pursuit. The old duchess, it is related, was a great lover of the Chinese herb, as well as an amateur of the porcelain intended to contain the steaming decoction. It appears from an old anecdote, that the duke of Marlborough's high career, which open enemies in the field were unable to check, was first impeded, and his popularity impaired, by difficulties somewhat of a domestic nature. They originated from the indelible spots produced by a cup of tea which his duchess spilt upon the buff brocade of a noble lady, who became incensed at this trifling circumstance. In this humor, as the anecdote goes, she offered herself a willing instrument to convey to the ear of her mistress, Queen Anne, in whose favor she stood high, insinuations and surmises respecting the absent warrior. Dissatisfaction and distrust having been once planted in the breast of the queen, his recall and forfeiture of royal favor were the eventual result.

The old lady who presides over this paradise of porcelain, and receives all the emoluments as superintendant of these treasures, declared to me that her life was made wretched by the clamorous cawings of the black rooks, which actually darkened the boughs of the trees that overhung her dwelling. Their never ceasing croaking nearly rendered her voice inaudible, whilst she undertook to narrate to me the sufferings she endured from their offensive throats. This noise does not cease even during the hours of repose; for some of the old wary rooks, like challenging sentinels in the dark, croak out, by turns, now and then, during the livelong night, a hoarse note, which, if it could be translated into English, would probably mean—"All is well." Sighing, the old lady concluded by observing that she had no prospect of ever getting rid of them, except she herself died; for the duke would not suffer one to be killed,

These rooks find favor in the eyes of gentlemen possessing castellated ruins, or groves of ancient pines and oaks; as by a sort of romantic association of ideas, these unseemly birds are considered classic tenants of such solitary places. It requires, however, something more substantial than romance to support a flock of a thousand rooks, and only noblemen, or proprietors of great estates, can afford to allow them a free range for their flight over broad domains; and to submit to the losses to agricultural labor, which their predatory habits sometimes produce.

They become a heavy tax to the farmers who hold their leases from gentlemen possessing a fancy for keeping a rookery, or allowing these birds to build their nests on the tree-tops around their dwellings. Like the crow in the United States, they settle sociably upon the fields of sprouting grain, and together they commence industriously their work of destruction by seizing upon the first green blades that push above the surface of the ground. To their tugging beaks the slender fibres of the incipient roots at length give way. Then their spoil appears triumphantly dangling aloft from their beaks, as if to give the farmer a more distinct view of the progress they may be making in devouring his crops. In the vicinity of estates belonging to some noblemen, who have a passion for increasing and protecting the flocks of these mischievous and unwelcome intruders, it appears from a statement made in a late English paper that the farmers within the range of their flight sustained damages to their crops of greater amount in value than £2000 (10,000 dollars) annually, above a thousand rooks being sometimes seen at one time upon a field of peas or grain of no greater extent than a dozen acres. A New-England farmer's boy would unwittingly suppose himself to be doing an acceptable service to the country by directing his exterminating rifle against them, without imagining that any christian people could any where pos-

sess a romantic fancy for these birds of ill omen, which from a strong family resemblance appear to be cousins german to crows.

A short ride brought us from Woodstock to Oxford. The colleges of Oxford, it is well known, are the most attractive objects in the town. Although these colleges form collectively, a greater number of beautiful structures than can be found in any other English town of the size of Oxford, yet they are so located in different streets, without any apparent order or regularity, and are so closely surrounded by dwelling-houses, that their appearance is neither so grand nor imposing as might be supposed from the detailed description of the individual buildings. The access to some of the finest of them is by narrow streets, which prevent the spectator from seeing them to advantage. They are all constructed of a light colored freestone, generally with the favorite pointed arched windows of the Gothic architecture. The very stones of the walls of several of the buildings are chafed into furrows by the storms of four or five centuries, which have beat upon them with rains, and crumbled them by frost, until the original sharp angles formed by the chisels have been worn away, and left half rounded, like those of weather-beaten rocks. Connected with the associations of the early literature of England, a view of their time-worn walls cannot fail to produce feelings of veneration. The buildings of the University consist of twenty Colleges and several halls, affording accommodations to about 1700 students. Several of the buildings are of quite ordinary dimensions and appearance, and others again, are of such magnificent architectural proportions as to rivet the attention of the spectator. Christ Church presents to view a grand front of about four hundred feet in length, built of hewn stone in the Gothic style, with much finely sculptured work. In the tower is the famous bell, christened Tom, weighing 17,000 pounds. The



hall is above 150 feet in length, 50 feet in height, and 40 feet in breadth. The day passes away almost imperceptibly whilst one is occupied in viewing the different buildings and libraries, and the interest felt seems rather excited than diminished by a hasty examination. The Bodleian Library, as I was informed by the librarian, the Rev. Dr. Bliss, contains upwards of seventy thousand volumes, besides a most valuable collection of manuscripts. Through the friendly attention of this gentleman, I was enabled to obtain for republication, on a second visit to Oxford, (after having in vain scoured all the principal wonderful repositories of old books in London,) a manuscript copy of a small original American work now out of print and almost unknown in the United States, written by Roger Williams, the founder of the State of Rhode-Island. This book describes in a quaint peculiar style, the manners and customs of the Indian nations, among whom Roger Williams found a hospitable shelter, beyond the reach of the persecutions of his fellow countrymen. Having become domesticated among these sons of the forest before the introduction among them of the vices of civilization, he has given, as the result of his personal observations, a more exact and lively sketch of their domestic habits and recreations than is found in the descriptive accounts of most other writers of New-England.

One feels how inadequate not only a visit, but even a whole life spent in one of these vast libraries, would prove, for the examination of the countless tomes, which perfectly distract the bewildered gaze. Few spectacles in all the range of sight-seeing are so unsatisfactory, as that of a vast library, in which one views myriads of volumes arranged in order like the ranks of a countless army, with not an individual of which the spectator, in his hasty review, has an opportunity of becoming acquainted. The Radcliffe Library has a superb exterior of hewn stone, sur-



mounted by a dome of great size, which seems to make amends, like the gilded coverings of some modern books, for the more scanty contents. A continued interest is kept up whilst the stranger is occupied in surveying the several chapels, the exhibitions of fine paintings, and numerous other objects, which serve to gratify curiosity.—Following the example of preceding visitors, a small party of us, each in turn, rested on the identical cushions of the chairs in which the emperor of Russia and the king of Prussia were seated to receive their honorary degrees.

In some of the Chapels are beautiful windows of stained glass. Judging from the specimens of modern art in the manufacture of stained glass, (an art which was once supposed to have been practically lost) arranged near those of ancient workmanship in the same windows, there appears to be no modern degeneracy in the brilliancy of the tints.\* In the improved modern manufacture of this glass the pictured designs are made upon larger panes or plates by burning in the blended colors to form the figures.

One of the finest colleges in Oxford, called Christ Church, was founded by Cardinal Wolsey, who left a name which will long be cherished by scholars for his munificent patronage of science; and an example which will never be forgotten by time-serving politicians. Rejected from royal favor, he exclaimed in his dying moments, had I served my God with the same zeal and fidelity that I have my king, he would not have given me over in my gray hairs.†

The dresses of the collegians are not like those of col-

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\* Some very fair work in stained glass is now done in Boston. It is, however, alledged that the colors of modern workmanship are not so permanent or unchangeable as those of former times.

† Although these literary Institutions and endowments now appear of such magnitude, yet, like all other human institutions, they were commenced on an humble scale and have been gradually, in the long course of 1000 years, cherished by successive subscriptions, royal grants, and bequests of individuals. It may be a subject of congratulation that so much

legians in the United States—the ordinary attire of the inhabitants of the country ; but are peculiarly distinguished by caps and gowns of various forms and colors. The following sketch of them is copied from a small book giving a description of Oxford.

“ A gentleman commoner, appears in the streets with a velvet cap that covers the top of the head, surmounted with a silk tassel. Noblemen have two dresses ; the first, which is worn on public occasions in processions, is a gown of purple damask silk richly ornamented with gold lace. The second is a black silk gown with full sleeves. A cap similar to that already described with a gold tassel is worn with each of these dresses. The doctors in divinity, and of law and physic, are very gaily attired on public occasions, in gowns of scarlet cloth, with sleeves and facings of black velvet and of pink silk.” So much for the livery frivolously worn by scholars.

In passing through one of the immense kitchens, the culinary operations and arrangements did not appear to be conducted on the most perfect model of neatness, and in

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has already been accomplished in the United States in the comparatively short term of one or two hundred years, and it is pleasing to indulge the imagination in a prospective range through the long period of 800 revolving years, to form conceptions of the state of the scientific institutions which may then exist in the United States. In 1560, it is stated, so thinned had this university become of its members from political and other causes, that not one person performed theological exercises in the schools, and only one in the civil law, and three in physic; and “ there were only three university preachers in Oxford. Hence the pulpit was frequently supplied by laymen. The sheriff, on one occasion, mounted the pulpit with his sword by his side, and his golden chain of office round his neck ; and preached a sermon to the academics. This event sufficiently evinces that ecclesiastical literature must have been low indeed, or the Oxonians would never have listened to such flagrant absurdity as the following:— Says the preacher, ‘ where I now stand I have brought to you some fine biscuits, baked in the oven of charity, carefully conserved for the chickens of the church, the sparrows of the spirit, and the sweet swallows of salvation.’ ”

One of the refectories which was shown to me, the tables of the students of noble descent are separate from those of the common students ; being placed upon a platform elevated a few steps above the level of the floor. It was stated to me that they are waited upon at the dinner table by some of their fellow-students, who for this humiliating service have compensation allowed to them in the permission to fall to, and devour the fragments of the feast they have served up. This plan has also been followed, in some instances, in the colleges in the United States ; but it has uniformly been attended with unpleasant feelings to the young gentlemen of high and generous feelings, who have been compelled to call on their companions to perform the menial offices of servants ; and however laudable may have been the thirst for knowledge which has induced poorer students to submit to this degradation, the moral effect of introducing distinctions of this kind among mere school-fellows and associates, before they have entered upon the career of manhood, cannot but have a tendency to break down the spirit of the poor, and to exalt the pride of the rich.

In the middle of the area of one of the courts or yards inclosed by the walls of the college, some ashes lay in a mouldering heap, intermingled with fragments of wooden window shutters, nearly burnt to brands. Rude daubs of paint upon one of the doors were also pointed out as the effects of a late frolic of a few disorderly scholars, who were detected by the marks from the unlucky use of the brush, and were expelled.

Many days might be passed here with pleasure and profit ; but the transient traveller has little more than an opportunity to view the surfaces of buildings and of books, before he is hurried forward on his course. After another visit subsequently made to this place, it was with regret that I looked back upon its venerable buildings and shady

walks from the summit of a distant hill. Several of these ranges of hills are composed of pure white chalk, which lays revealed in full sight, whenever the turf is washed away by the showers from their bald sterile summits.

The thin dark green turf, covering the pure white chalk, has in one place been pared off from a steep hill side, in such a manner as to leave the outlines of the figure of a vast white horse portrayed as if apparently in a reclining attitude. It is said that "the country people in the neighborhood repair once a year, on a fixed day, to clean away the mould and scanty tufts of grass that accumulate on the surface of the white chalk, and to 'scour the horse,' as they term it, when the labors of the day are terminated by a frolic and feast."

Near the road-side, soon after leaving Oxford, we passed two gipsey encampments. Several of these gipsies in the form of sturdy sunburnt men, women and children, were lying at their ease upon the ground, lazily enjoying the sunshine; whilst others were seated near a large dinner pot suspended from crossed sticks over a smoking fire. These people being the first of this tawny race I had ever seen, attracted more particularly my attention. They travel in much better style, and apparently possess more of the comforts of life than I had previously supposed fell to their lot to enjoy in their wandering mode of life. Their large carts, in which are all their articles of furniture, are tightly covered with painted canvass, which excludes the rain and bleak winds; and protects both them and their effects, when they are suddenly compelled to retreat to a shelter from the drenching showers. They pitch a camp when they are to remain stationary a short time; and turn out their horses to browse upon the road-side. Soon after passing them, I noticed a handbill posted up, offering a reward for the discovery of the persons, who had on the previous day killed two sheep in the neighborhood.

One of the passengers observed that it is usual to see notices stuck up in the neighborhood of this vagrant race. The uncharitable supposition intruded itself upon our minds, that a part of this mutton was probably in the pot we had just seen suspended over the fire. The gipsies are considered in England as unprincipled depredators upon hen-roosts, and on all the petty articles of property that may be in their way. No plan has yet been successfully employed either to convert them to habits of industry, or to restrain their propensities for wandering. It is a signal of disquietude to a neighborhood, when a band of gipsies make their appearance to pitch their tents and erect their crossed sticks to support their steaming pot, which is so often to be replenished by other means than by regular labor. My fellow-passenger observed that they were tolerated more from personal apprehensions of mischief, than from compassion or charity ; probably for the same reason that the Indians court the good will of the devil—from a fear that he might do some harm.

The traveller sees no heavy masses of smoke ascending to the heavens, after he has departed from the manufacturing towns, and entered the agricultural districts ; nor does the sound of clattering machinery, except sometimes that of a newly introduced threshing machine, break the repose of the landscape. The agricultural districts are on this account commonly preferred by the nobility and gentry of the kingdom as a summer retreat and residence, when fashion induces them annually to desert the thronged streets of London, and like birds of passage, to migrate to enjoy the fresh breezes of the country ; or, as intimated, not unfrequently, to recruit the exhausted health and finances, which a winter in London produces. A manufacturing town or a busy commercial one, and a genteel town, can have in their consideration no existence in unity of time and place.



In the valley overlooked by the towers and battlements of Windsor Castle, within the inclosure of a small yard, is the great telescope made by Herschel. The frame work of the telescope now appears weather beaten from long exposure. The length of the tube is nearly forty feet, and its diameter is as large as a hogshead. This reflecting telescope, having its magnifying powers produced by the aid of concave mirrors, was once considered more perfect than the refracting telescope, which is formed by the adaptation of convex glass lenses. The imperfect refractive powers of common glass lenses renders the appearance of objects indistinct, tinged about their edges with claret colored and greenish fringes, somewhat like those produced by viewing similar objects through a prism of glass.—These imperfections have been nearly obviated by an artist who deserves as much credit for the good sense displayed by him on commencing his task, as for his ingenuity in perfecting it. He took his lesson from the model of the human eye, which is furnished with a lens, or chryselline humour which operates like one, and transmits the rays of light without the imperfection of imparting to objects the discolored appearance complained of. On examination, he ascertained that the humor forming the perfect natural lens of the eye is constructed of a transparent solid, and a fluid substance, each of different degrees of density. Transparent bodies of different densities, it is well known, possess different refractive powers. By the combination of the different refractive powers of two substances, one being made to correct the aberration of rays caused by the other, the human eye is made to perform its functions with unerring perfection. In humble imitation of this perfect model, very superior object glasses for telescopes have been made. It is by thus studying the physical organization of the works of nature, which are all planned with an intelligence that gives laws to

human science, and a skill that never fails of causing all objects to fulfil the wise purposes designed in their formation, that the man of acute discernment may derive the most valuable hints and accurate instruction in all the departments of mechanical science.

On the hill side below the royal palace, called Windsor Castle, are the dusky ordinary edifices for the reception of the pupils of Eton School, celebrated in the annals of English literature as the place of early instruction of many distinguished scholars and statesmen. After stopping a short time to survey the irregular mass of buildings, which have a dilapidated appearance, I continued my walk to Windsor Castle, which makes an imposing exhibition of strength, crowned with battlements and towers. It is situated upon the edge of a solitary hill or bluff that extends into a vast lowland interval, through which the Thames winds its way to the ocean. From this peculiarity of its situation Windsor Castle commands a most extensive view of the adjacent beautiful country, improved to the utmost by labor for centuries. You look abroad over cultivated fields, forests, parks, and country seats, which appear to rise one behind another in almost interminable succession, until the farthest become mingled in indistinct mists on the extreme edge of the horizon. Seven or eight counties of England, it is stated, are discernible from this commanding situation. Even from the gravelled walks, or terrace, on the brow of the hill beneath the Castle walls, the view is said to be one of the finest in England.

The interior of the castle, with its state apartments and appendages for the accommodation of royal personages, is all exhibited by the domestics ; who here, as elsewhere, drive a money making business by showing these sights. We were requested to remain for a few minutes in an anti-chamber, until a sufficient number of visitors might be collected to form a small party. This plan the domestics,

who officiate as guides, find best adapted to their convenience for the despatch of business. Each guide, at the head of a squad, commences the circuit of the suite of apartments. He gives, systematically, a short description of each article of furniture or picture successively in a hurried monotonous voice, as if sensible of having repeated the same farce a thousand times. The tribe of sight-seeing gaping spectators follow after him, listening and wondering at every step. In one room, are shewn specimens of ancient armor arranged against the walls; in another, many valuable paintings of celebrated ancient and modern artists. Here is suspended the toy-like flag, presented by the Duke of Marlborough, on each returning anniversary of the battle of Blenheim, this act of fealty being one of the conditions of the original grant of the estate in Woodstock.—The diminutive handkerchief-like piece of silk, with a few fleurs de lis embroidered upon it, is truly a melancholy memento of the commencement of the splendid but useless continental victories, for which England has so profusely poured out her best blood on foreign fields, and expended treasures, the taxes for paying the interest of which extort the sighs and curses of the poor man, and carry desolating poverty to his fire side. A similar act of fealty is performed by the Duke of Wellington, for the munificent grants which he has received from the nation. In acknowledgment of these grants he presents, every year, a small tricolored flag, as an emblem of his triumphs over Republican France. In a third apartment, you behold a real Royal Throne, which, until thus palpably exposed to view, I had almost supposed to be a fiction of poetry. It is prepared here for holding the levee of a royal court. As you proceed, you are conducted into another apartment, containing the royal state bed, which is kept rather for pomp and show, than for receiving beneath its lofty curtains the tired bodies of royal personages. You are finally conduct-

ed with civility to the door, the fees as usual not being forgotten, although in the abode of the king of a proud nation. Such mercenary demands and exactions may be deemed derogatory to his personal, as well as to the national dignity.

The general appearance of the interior of the royal palace at Windsor is not more splendid than that of some of the palaces of the English nobility. The palace of the Duke of Devonshire is a more modern building, and its interior is more splendidly decorated with costly sculptured marble. His present Majesty is making great improvements, by constructing an additional wing to the castle; and has employed, for a long time, several hundred men in hewing the stone and preparing other parts of the work. A million of dollars will here probably be expended, as similar sums have been elsewhere, for no other object than the gratification of royal caprice. There are embrasures formed in the walls of the top of the castle, and a few pieces of light cannon are mounted behind them. For the purposes of defence against the implements of modern warfare, they would prove utterly unavailing. Within the circuit of the walls is a fine old church or chapel, in which the royal family attend service, and in the vaults of which, after their career is terminated in this world, they are entombed. Here are deposited the remains of George the Third—of him for whose long life prayers were once on each returning Sabbath read in the assembled churches even of distant America,\* and in whose name the invading Britons

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\* From the early habit of hearing the name of the king connected in their regular form of prayers at the church with that of the God whom they reverently worshipped in their Sunday orisons, the Episcopalians were not generally the most strenuous advocates of revolution in the United States. "To fear God" and "honor the king" were lessons once instilled into youthful minds in the United States, as among the most valuable lessons of christian duty.



afterwards desolated, with fire and sword, the remote shores occupied by a people who boldly advanced the uncourtly doctrine that "all men are created equal." Alas! the truth of their doctrine does indeed appear "self evident" in this mausoleum. That powerful monarch, whose mandates fleets and armies had obeyed in all parts of the world, during several years roamed about these halls, bereft of his reason, and blind—an object of compassion even to those who had been his enemies, and a touching spectacle of royalty in ruins. "Withdrawn from all eyes," it has been observed, "but those that watched to supply his necessities, in silence and in darkness, to him there was neither sun nor moon, nor kingdom, nor wife, nor children, nor subjects. He was alone in the midst of the living."

Few kings have set better examples to their subjects, and possessed more of those christian virtues usually found under less temptations in the walks of private life, than George the Third. The sternest republican cannot refuse to allow that he was a patron of the arts and sciences, nor deny that, through a long life, he acted with sincere and steady zeal to benefit the country which he ruled. The rigid moralist will admit, that although many men of more splendid talents and learning, and of more fervent piety may have lived in private stations in England, yet few men in the ranks of royalty have displayed greater individual worth. He left not his mantle to his son and successor, to whom must be awarded by posterity the character of a sensualist and voluptuary; with few of the virtues of his parent and many of the vices of his most corrupt predecessors on the English throne. Of the youthful character of George the Fourth, Mr. Jefferson, in his early letters, gave a sketch, the fidelity of which his maturer years confirmed. The merits of his dinners and wines, according to Mr. Jefferson, seemed to engross his undi-



vided attention, when a young man, and the vigor of his manhood was exhausted by his debaucheries.

From Windsor to London is a pleasant ride of only about a couple of hours along the level banks of the Thames. After entering Kensington, there is a continued village for six miles to the suburbs of London. On approaching the great city, coaches appear in sight every moment, hurrying swiftly forward as if the drivers were all impressed with the conviction that "time is short and life uncertain," and were accordingly all hastening to accomplish their appointed tasks before their sands run out.—Toiling slowly amid the dust, follow heavily laden carts, and throngs of foot passengers occupy the sidewalks.—When the wheels strike the pavements of the streets of London, the throngs increase, and the tramp of horses' feet, united with the rattling of carriages, becomes incessant. The coachman displays no small share of dexterity, in threading the narrow defiles of the crowded streets between the carriage and wagon wheels, which frequently allow only a few inches more space for a passage way than the length of the axle.

By the peculiarly concave formation of the wheels the hubs are entirely withdrawn within the line formed by the exterior surfaces of the rims, to prevent the delay and embarrassment which result from their becoming wedged or locked one with another. When the wheels encounter each other, the shock falls harmlessly on the strong circle of iron forming the tire.

The evening having set in, the streets of London appeared brilliantly illuminated by gas. This almost converts night into day. A most chilling feeling of loneliness, and of humility overpowers the traveller on mingling for the first time in the throngs with which the streets of London are crowded. For a stranger, there seems to be no fellow-feeling of kindness, and no look of

regard ; but every individual pursues his own way, intent only on the accomplishment of his own purposes. There is indeed something far more cheering and pleasing in beholding a solitary light which gleams from the window of some cabin on a lonely road, than in viewing the glare of light which here illuminates the streets, and bursts like gleams of sunshine from the shop windows. Having proceeded on the way to my lodgings, I soon found myself at home among some old acquaintances and fellow-countrymen, in one of whom I found an agreeable fellow-traveller.

After procuring lodgings, the stranger in London feels impatient to commence his career in exploring this interesting region of research ; and after a long residence he may feel a disappointment, on departing from this great city, that he is leaving so much unseen. Reserving observations on this exhaustless topic until my views had been a little more matured by familiarity with English habits, I terminated my rambles in a few days, and departed from "famous London town" by the same road which John Gilpin took on his memorable excursion. Like most other travellers, on passing through Edmonton, I raised my eyes involuntarily to the window of the inn, in the hope of seeing a female face, which might answer for that of Mrs. Gilpin, anxiously protruded at the sound of approaching hoofs in expectation of her husband.

At Newmarket I remained a day to witness the sports of the turf, which are here conducted on a scale that is unequalled in the world. It is in truth the sole business and pursuit of the inhabitants. The soil is of that poor turf-bound level character, which seems adequate to yielding only a scanty herbage to the closely gnawing teeth of sheep ; but the inhabitants make amends for the deficiency of agricultural crops, by reaping a rich harvest of profits from the sports of the turf. Profuse, indeed, are the

expenditures of the multitudes, who assemble here regularly at three several racing seasons in every year, each continuing six weeks, with an intermission of every other week. To the village of Newmarket, noblemen of the first rank in the kingdom not only resort personally, for the purpose of betting, but they also furnish many of the race-horses, the names of which, as well as of the proprietors, are inserted in the daily bulletin of the races, published here. The Duke of York, a member of the royal family, was bustling around on a little poney, immersed in the business of horse-racing, having several horses entered for the course ; one of which, a fine mare, he has, with a strange sort of flattery, named " Sister to Leopold," as a compliment to his brother's son-in-law. The Duke of Grafton, and one or two other dukes, and a considerable number of noblemen, were present on the field, mounted on horseback or seated in barouches. The London papers give weekly details of all the particulars of the proceedings at Newmarket, stating the names of the horses, and of the owners of them, and the stakes or purses for which the horses have run ; but the immense amount of private bets among individuals, cannot, of course, be ascertained, or reported by the newspapers. In one of the papers, published subsequently to the race at which I was present, it was stated that the Duke of Grafton had won, by one of his horses, during the week, upwards of 5000 guineas ; or about 25,000 dollars. A sketch of a day at Newmarket may impart an idea of the routine of amusements for a whole season at this horse-racing arena.

The gentlemen of the turf partake of their breakfast at a late hour of the morning, and despatch it as an unimportant repast, because a previous night of debauch has produced a languid appetite ; and they are moreover unwilling to impair the relish and enjoyment of the *summum bonum* of a sportsman—a good dinner. At about eleven

o'clock, there is a general attendance at the Newmarket Exchange, or Subscription House, as it is called, constructed like those places of commercial resort, where "men most do congregate." The area of a paved court is partially enclosed with piazzas, under which the worthies of the turf assemble every morning previous to the commencement of the races of the day, both for the purpose of discussing the merits and points of the horses entered for the course, to prepare themselves for making new bets, and also for settling the bets already decided by the races of the past day. There is here a loud continual buzz of numerous voices, not unlike what is heard on the Exchange at Liverpool, excepting that horses, instead of cotton, are the engrossing theme of universal conversation. Many individuals were moving about and bustling through the crowd, each with a memorandum book and pencil in one hand, and packages of bank notes of goodly bulk in the other, stopping here and there as they proceeded, to settle old scores of bets, whenever they met individuals whose names were registered in the book as debtors or creditors. All the transactions are managed in a business-like manner by a class of men, who appear to be as completely occupied by the details of a horse-race, as if it were the only object worthy of their care and solicitude. Even their very servants and grooms, in their subordinate departments, act their part with as much zeal as if they also were amateurs of their profession. They frequently give gentle exercise to the horses under their charge, by leading them about the roads and streets; and to appearance they are as careful of exposing them to the cold wind as a lover is described to be when he endeavors by adjusting a cloak or mantle to prevent the air from visiting his mistress too roughly. The horses are so completely enveloped in blankets or flannels, that only their goggle eyes, noses and legs are visible, whilst they stalk along seemingly at-



tired as ghosts of horses in their appropriate winding sheets. By thus preventing any chill or check of perspiration, the jockeys deem that the horses preserve the full suppleness of limbs necessary for their ready action in the trying moment of the race. It is stated in an English periodical Review, that George the Fourth, like his brothers, was once passionately addicted to the sports of the turf, and that one of his horses won a race by the improper practices of his groom, who gave cold water in injurious quantities to the horse of his antagonist ; and that for other ungentlemanlike modes of management, he who by the English law is deemed able "to do no wrong," was deemed by the worthies of Newmarket, to have done so much wrong as to have rendered himself unworthy of being their boon companion.

After "change hours" were past, the Exchange or Subscription House was speedily deserted. Mingling with the crowd, I proceeded to the great focus of the attraction of Newmarket, the race course, near the outskirts of the town. The ground is well adapted to the purpose for which it is appropriated, being too sterile for cultivation, and covered with a thin tough turf. The course is about three miles in length, nearly in a straight line, extending over some gentle slopes. Near the spot at which the horses come out, ropes are extended on stakes on each side of the race course, to prevent the spectators, in their eagerness to obtain a full view of the spectacle, from intruding too far into the path designated to be left open for the horses. The judge is stationed in a sort of sentry box mounted upon wheels. Before the horses start, a sign board, inscribed with the words "Betting Post," is erected conspicuously on a tall pole, on a convenient spot by the side of the race-ground. - This serves as a rallying point, around which the sportsmen assemble, some on horseback, some on foot, and some in barouches and in various other



kinds of carriages, all commingled and wedged together, like a swarm of bees clustered around the dry branch of a tree. Gentlemen are mounted on the tops of their carriages for the greater facility of seeing and hearing; and the coach boxes are all filled with those who had previously occupied the interior of the coach, and the drivers are dismounted to change places with their masters. Every person is provided with a pencil, and a memorandum book of the same kind as previously used in the morning at the Exchange. Soon are heard above the regular confused murmur of voices, a few louder tones in which the word *bet* swells more distinctly upon the ear, like occasional sounds of cannon above the constant popping of musketry on the field at a review. This soon increases when the thronged multitudes become more eager at the moment the horses at the far distant starting place are awaiting the signal for commencing the race. You now hear no other words than "I'll bet you forty, fifty or an hundred pounds" on one or the other horse, the individual betters calling each other by name, and being answered in the frequent response, "done," "done." To record these bets as fast as they are ratified, the pencils are kept busily employed; after which they are held suspended idly between the fingers until another bet is offered and accepted to be similarly recorded. This scene continues until the moment arrives when the horses at a distance are seen to dart forward. After this the bets are made in so much haste and apparent confusion, and by so many loud voices at the same moment, that all order and system are lost in one general deafening clamor. For the sake of making a show of business without incurring much risk, and to maintain their importance, the professional gentlemen are sometimes found, it is stated, to make their bets equally upon opposite sides, when they of course win as much as they lose.

The race-horses, on first starting, appear diminished, like specks on the extremity of the race ground ; but instantly their dimensions seem to enlarge to view, and to continue to expand until the sound of their hoofs, clattering at a distance, reaches the ear. Then the horses, with outstretched necks, rush by, bearing riders clothed in parti-colored silk dresses of bright dyes. The jockeys bend forward, as if eager to outstrip the speed of the very animals on which they are borne past you, as if swept along by a whirlwind. The race being terminated, the riders are taken immediately to a pair of scales to be weighed, in order to ascertain if they bring in the respective weights, which are assigned to each rider to equalize the burthen upon every horse. It is sufficiently easy to increase the weight of the rider when he is too light ; but if, unfortunately, the ambitious jockey should happen to be too fat for his business, it is no easy task for him to divest himself of a score of pounds of human flesh in Shylock style, without drawing one drop of Christian blood. This, however, they actually accomplish by a process of sweating between blankets, and by cathartics and divers other expedients. They present themselves, it is stated, in a few days with their shrivelled skins flabbily wrapped around them, sufficiently lightened of their load of flesh to qualify them for a seat on a race horse. Incredible accounts are published of the number of pounds of flesh, of which one of these jockeys will voluntarily deprive himself, by severe corporeal privations and sufferings, which would make them heroes or martyrs in a better cause.

The different races occupied about two hours, at the expiration of which, the vast assemblage dispersed, and the fields and roads in every direction were occupied by clusters of persons retiring and still discussing the merits of the competitors in the race. In a few minutes, after examining the Course, I looked around and found myself

alone, only a few solitary retreating footsteps being heard. The face of the country appeared to be calm and smiling again, where there had just been exhibited such a tumultuous spectacle of gambling and excited human passions.

After the races are over, the sportsmen conclude the day at the table, and arouse themselves the next morning to again go through the same scenes. The bets are generally paid with particular punctuality, being considered debts of honor. The tailor's and shoe-maker's bills are classed among the common vulgar debts, and as such, are entitled to only secondary claims upon the purses of these free hearted gentlemen.

A few miles distant from Newmarket is Cambridge, the seat of the celebrated university of that name. The population consisting of above ten thousand persons, is in a great measure supported by the expenditures of the students. After alighting at the inn, and sallying forth to view the town, the stranger at first experiences sensations of disappointment on observing the ordinary appearance of the college edifices, and does not realize the beauty of their architecture until he reaches the banks of the river Cam, upon which the colleges front. The Cam is a very small stream, now converted into a navigable channel. It displays no bright sparkling waters, its course being rendered sluggish by locks, and its borders embanked and rounded like those of an artificial canal. This channel of commerce, opened through the walks of science, does not mar the beauty of the scenery. The boats impart animation to the views whilst gliding amid the lawns, and beneath the shade of noble trees, which have stood for ages, in front of the beautiful Gothic structures. Several spacious edifices are now building, in addition to the present number of thirteen college structures and four halls. The walls and arches of one of the buildings are sculptured by the most patient labors of the chisel, peculiar to the Gothic

style of architecture, and termed "florid". Most of the new churches erected in England are built in the Gothic style, to which the taste of the English nation seems particularly inclined. Freestone, of a light cream color, abounding in this country, forms the common material employed in the construction of public, as well as of many private buildings. When in its soft state, freshly extracted from the quarry, it is wrought with facility into the minutely carved or fretted work of the Gothic style of architecture. The English artists have thus at hand a material suitable for their most elaborate designs, and susceptible of being chiselled by the stone cutter at a very moderate cost. Were the more hard and stubborn granite and sienite the only kinds of stone within the reach of the architects here, as is the case in most parts of New-England, the national taste for the highly carved and ornamented style of the Gothic architecture would not have been so generally gratified in England, on account of the great expense necessary for the cutting and sculpture of these refractory materials. White marble is here rarely employed as a building material, and is considered by an Englishman almost as a sort of precious stone. He rarely fails to notice it when he surveys the marble edifices of Italy, or even of Philadelphia. The granite is also rarely used in England for the construction of public buildings, most of the quarries being remotely located in Cornwall, and in Scotland and Wales.

The plan of construction adopted for the colleges appears to be that of a quadrangle, or large square structure, inclosing interior open yards, or courts; in some of which are fountains, gravelled walks, and verdant lawns. The walls of the largest buildings inclose two or three successive courts, connected together by an arched passage.—On entering one of these courts, no breeze of fresh air is felt. Lofty walls rise on all sides, pierced with tiers of win-



dows. The greater portion of the ornamental architecture is elaborately displayed upon the fronts of the walls facing these inclosed courts. In several of the colleges the lower windows of the outer front walls, next the street, are closed by iron grates, or bars, to cut off all communication between the courts and the surrounding streets. The great gates are closed at a fixed hour every evening, and the students are thus from necessity obliged to enter the college in due season, or to remain excluded for the night; unless they can succeed in gaining admittance by some unclosed loophole, or by the favor of the porter, who is a sort of Cerberus to watch the portals, and to cut off nocturnal communication between the students within and the world without.

Each college, or hall, is governed by its own statutes, subject, however, to the paramount general laws of a sort of Congress or Senate, composing the supreme ruling authority. In this respect, the government of the several colleges resembles that of the several individual States of the North-American Republic, which are all under the control of the paramount laws of Congress. "No language except the Latin is permitted to be spoken at any official meeting of the officers of the government, and three years are to be passed here by the student, before he can be qualified for taking the degree of Bachelor, and four years more for the degree of Master of Arts."

One of the principal libraries contains nearly ninety thousand volumes and manuscripts. The librarian of one of the principal colleges stated to me that there were about fourteen hundred students registered at the University of Cambridge—all of this number of persons being actually resident as students. Many graduates have their names retained on the lists as being connected with the University, in order, it is stated, to have the privilege of voting in



the election of members of Parliament, two of whom this University has the privilege of returning.

The students wear abroad in the public streets, black silk gowns as well as the black velvet cap surmounted by the small square board and tassel, of the same form as those worn, with a zeal to copy European fashions, at some of the American colleges. There appears here, as usual elsewhere, those who think as much of decorating the exterior of their heads as of storing the interior with useful lore. The academic caps cover only the crown of the head, leaving a portion of the hair unshrouded by the pall of black velvet, from beneath which I observed in one instance evident manifestations of the labors of the toilet, bestowed in arranging glossy clusters of curls that might even have excited the envy of some of the fair sex.

The chapel of King's College is celebrated both for its magnitude, and the beauty of its architecture. The length of this chapel is about 300 feet, and the height about 100 feet. The roof is composed of a great canopy or arch of massy stones, which are nicely balanced to rest upon the buttresses of the side walls. Some of the blocks of stone suspended in the well adjusted arch, weigh, it is stated, above a ton each. In the guide-book, containing a description of the chapel, these massy stones are mentioned as "seeming to hang in air, as if art had taught them to forget nature, and weaned them of their tendency to gravitate."

Every stranger who approaches the venerable Universities of Cambridge and Oxford, cannot but feel a reverence for the ancient walls, where so many eminent scholars have studied and written, whose names have become known and illustrious throughout the world. It requires not a strong effort of the fancy to picture the forms of Newton, Bacon, Milton, Coke, and of many others, as personified in the scholars moving beneath the aged trees where they

once strolled ; but all these ideal associations, excited by the actual presence of surrounding objects, which, from their fascinating charms, rivet one to this spot, are feebly experienced by those who owe their knowledge of them to the cold description of the traveller.

A debt of gratitude is due to the English Universities, rather for what they have formerly done than for what they are now doing in actively advancing the cause of science. They have sent forth many excellent men, whose writings have cheered the devout in heart ; and it seems almost a sufficient honor to have enrolled on their catalogue, one name as distinguished as that of Newton. Excepting those scholars who are supported here upon charitable endowments, the students are, it is stated, principally from the noble and wealthy families of England, owing to the heavy expenses attending an education at Oxford or Cambridge. The potency of the Circean spell, which wealth throws over intellectual exertion, will readily suggest itself as a cause of enervated relaxation among most of the graduates of the British Universities. A Scotch writer has observed that there are few instances known throughout England where men have attained distinguished eminence even in the profession of the law, who have commenced their career with the possession of an easy income of two or three hundred pounds a year. Many of the eminent scholars who have conferred honor on the Universities as having been registered on their lists, reached these halls rather through the aid of patrons, after having previously displayed talents deserving of being fostered. It seems probable that the very ease insured to the professors and fellows by rich endowments, may have had a tendency to paralyze their exertions by relieving them of all anxiety about the acquisition of the means of subsistence, as connected with the fees obtained from numerous scholars attracted to their lectures by the merit of their performances.

It has, in truth, become even a subject of complaint, that the very wealth which was intended to clear away the obstructions in the path of the scholar, and to secure for him the leisure necessary for vigorously advancing in his pursuits, has had an effect in some respects contrary to the intention of the donors and royal benefactors. Great wealth and the good ease of snug fellowships, have a tendency to enervate and relax zeal in the cause of science. Without a stimulus, other than that of excited ambition, they remain contented in the accustomed drill of the rear ranks of science, instead of ardently leading in advance; and are commonly found disposed to remain entrenched to defend old doctrines, rather than to take the open field to aid in the introduction of new ones. The theories and discoveries of Bacon and of some other eminent philosophers, it is well known, were combated as innovations in these seats of science, long after they were received and sanctioned by learned men elsewhere. The professors of the Scottish Universities are in a degree dependant on their personal exertions for their support, which is rendered more or less ample in proportion to the sale of tickets of admission to their lectures.\*

The country between Cambridge and Leicester presents to view a succession of fields of grain, waving in the wind as far as the eye can range over hills and vales. Considerable districts are not inclosed by hedges or fences of any kind, but lay open and exposed to the road. No cattle are, however, suffered to go at large in this district, to subject the growing crops to danger from their depredations. Near Oakham we passed a forest of six or eight hundred

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\*To bring the facilities of obtaining an education at a University more within the reach of the middling classes, by greatly reducing the expenses, two charters have been granted for the establishment of Universities in the city of London, and it may be hoped that English science, like many English libraries, will not be guarded as if too choice a treasure to be enjoyed by the common people.

acres in extent. The view of this tract of woodland resembles that of some of the forest scenery of the United States. On approaching Leicester the country becomes more uneven. Some beautiful valleys are situated among the hills, with rivulets winding their courses in graceful turns through the level meadows. The land is under a high state of cultivation, every spot capable of yielding herbage or grain being improved with apparent care. The coach arrived in Leicester about seven o'clock in the evening, having traveled at the rate of about seven miles per hour.

Leicester derives some celebrity from the extensive manufacture of stockings, and for a fine breed of sheep, which are the principal matters of fact that distinguish this town. Its vicinity affords excitement to the imagination, from the battle of Bosworth Field, which here decided the fate of Richard the Third ; the scenes of which, as sketched by the pen of Shakspeare, and brought home to the eye as well as the ear by a powerful actor like Cooke, almost induce the same feelings of interest in the traveller as if he were looking over the ground after having been present at the contest. An old bedstead it is said, is still exhibited as the one on which Richard slept the night previous to the battle.

Leaving Leicester, we passed through a mountainous country, and felt quite at home for a time in a region of stone walls. The hills of Derbyshire are too precipitous and rocky for tillage, and are improved for the pasturage of cattle. Indeed, many of the ridges are too barren even for this purpose, and are more profitably occupied by plantations of pine and larch. Every part of England is thus rendered productive by the careful industry of its enterprising inhabitants, from the stagnant fen to the precipitous hill top. Making a circuitous tour through several small towns, we returned again to the Bridgewater-Arms in Manchester.



The speed of the public coaches on the cross roads in the country does not exceed seven miles an hour. On the main roads in England, in some instances, ten miles an hour are accomplished; but this seems to be the greatest speed attainable, as the horses are soon worn out, and become as lank as greyhounds.

## MANCHESTER.

In a humid state of the atmosphere, the traveller is apprised of his approach to Manchester, when from the summit of some hill over which the road may wind, he first beholds at a distance the dark mass of smoke, which hovers like a sooty diadem over this queen of manufacturing cities. On approaching nearer, he views the numerous tall chimneys with smoky tops rising high above the roofs of the houses. A remarkable elevation is given to the vents of the furnaces, for the purpose of increasing the draught to render the combustion of the fuel more complete, and also to discharge the smoke into the air far above the windows of the houses. Notwithstanding these precautions, the inhabitants of the region below live amid sulphureous vapors, and the very walls of the houses are stained to a sombre hue by the coal smoke. During the summer, and also in dry and windy weather, Manchester might be deemed a pleasant place for a residence. But, at other times, and particularly on calm mornings in the early part of the spring, whilst a bright sun cheers the adjacent country, it displays to the inhabitants of Manchester its broad red disk, scarcely affecting the feeblest eye which gazes upon it through the dusky vapors, by which it is obscured. During the frequent foggy days in winter, an artificial twilight so completely shrouds the place, that at times the use of the gas lights becomes necessary, even at mid-day, for certain nice operations in manufactures. For the same reason, the lights in the large cotton mills are not extinguished until nine o'clock in the morning,



and are rekindled to form a brilliant illumination, as early as about half past three in the afternoon. Most of the labor at such periods is performed by the aid of artificial light. Nearly one half of the surface of the exterior walls of the manufactories is composed of spacious glazed sashes, which are arranged in profusion to admit all the scanty light which a naturally hazy atmosphere, rendered still more obscure by smoke, will transmit. When a slight breeze arises, this dark cloud is put in motion, and is borne away over the country in an unbroken murky volume, perceptible at the distance of twenty or thirty miles, like the long train of smoke which streams from the chimney of a steamboat, and leaves a dusky line extended far over the waters and shores. It is only when a fresh supply of fuel is added to the furnace fires that the palpable black smoke spouts upwards. On a calm morning it affords amusement for a few minutes to watch these columns ascending perpendicularly several hundred feet, like a gigantic tree sprouting upward and expanding its dimensions, until the rolling masses, representing spreading foliage, meet each other from adjacent chimney tops and become intermingled. When the kindled fuel burns clear on the grates, the trunk of this ideal tree appears to be cut off from its apparent resting place on the chimney top, and thus detached to float off into the air.\*

It has been stated that in 1831, there were nearly 400†

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\*At a court lately holden in Manchester, a fine of £50 (\$250) was imposed on a manufacturer "for having suffered too large quantities of smoke to be emitted from the chimney of his factory." This was a cure for a smoking chimney with a vengeance. It had, however, the desired effect, as it was alledged, for the fuel was afterwards constantly supplied regularly in small quantities to the furnace, by the man whose duty it was to attend it, and the cause of the smoke, in the too abundant supply of coal, was thus obviated.

†There is probably at this time (1832) nearly as great an amount of steam power employed to propel the steamboats on the river Mississippi and its tributary waters, as the whole aggregate amount of steam power in Manchester.

Steam Engines in operation in Manchester and in the adjacent suburbs, besides numerous forges, bleacheries, print works, and foundries. Taking the average of these 400 Steam Engines, at 14 horse power each, and the average consumption of coals per hour at 13 pounds for each horse power, it will appear that the quantity of coal consumed by them in each hour exceeds 70,000lbs; and if the quantity consumed in the foundries, bleacheries, and in other processes of manufactures, and by the inhabitants in their dwelling-houses, be computed at as much more, the whole consumption of coal in Manchester will not fall much short of 140,000lbs during each hour of the day.

The price of this important article of fuel, coal, on the abundant supply of which the prosperity of Manchester is so essentially dependant, varies from eight shillings to ten shillings sterling per ton, delivered on the banks of the canal. With the rate of exchange at 10 per cent premium, this price is equal to nearly two dollars, and two and a half dollars a ton, or about one third of the price of the same fuel on the seaboard of the United States.

Even at this low rate of the price of coals, steam power, with the building and fixtures necessary for operating machinery, has been leased in Manchester at £20 sterling per year, (nearly 100 dollars) as an enterprising American domiciliated here stated to me. An equivalent amount of water power may be obtained in most parts of New-England nearly forty per cent cheaper than this steam power in Manchester, the necessary mill buildings in each case being included. It is, indeed, only after viewing the vast amount of labor expended in mining coal and transporting it to the furnaces of Steam Engines, and the multitude of these costly machines, upon which the engineers are often at work, repacking the pistons and executing frequent small repairs before and after the ordinary hours of labor, and during almost every Sabbath, the only day on

which the boilers become cool, that an American can estimate the vast advantages possessed by the United States in the immense water power furnished by their innumerable rivers. The wealth of England could hardly purchase, at the rate of the cost of steam power in Manchester, the water power available within the limits of the United States. To this advantage of a cheap moving power may be attributed the remarkable prosperity of all branches of manufacturing industry in the United States, wherein a great moving force forms a principal part of the ordinary cost. The flour mills of the United States have long been celebrated for superiority in mechanism and effective operation over all other similar mills in Europe; and even the manufacture of coarse cottons and other fabrics which requires the hard twist of the throstle and the violent blows of the power-loom, is greatly indebted to cheap water power for the successful competition maintained with the steam power and cheaper labor of England. The difference in the cost of the transportation of the raw materials to the waterfalls located at remote distances from the seaboard, must, however, be taken into consideration with the comparatively light expense of transportation between Liverpool and Manchester.\* The first cost of a suitable lot of ground for the erection of a cotton mill in Manchester will be nearly equal to that of some powerful waterfall, with many acres of adjacent lands in the United States.

The mills are located near the bank of the canals, or rivers, in order that the coals may be brought by the boats to the very furnace doors of the steam engines; and also that the boilers and condensing apparatus may be furnished with an abundant supply of water. Mill lots thus fa-

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\*It appears by the report of the Committee of the Manchester and Liverpool Railway that the receipts to June, 1831, had been equal to 10s. 3d. per ton ( $2\frac{1}{2}$  dollars) and for passengers 4s. 7d. each (one dollar and twelve cents) for the distance of about thirty-six miles.

vorably situated near the centre of the town, are, as I am informed, held at very high prices.

The first cost of a good low pressure steam engine—the kind always used in Manchester, of 14 horse power, is above £575 or \$2700, as charged by one of the best machine builders.\* A first rate water-wheel, with the necessary fixed gearing for furnishing an equal power, will not exceed about one third of this sum. It will appear from this comparative view, that the great natural moving power available in all the northern parts of the United States is, collectively considered, of almost inestimable value, if estimated as affording the means of sustaining a numerous population, where a comparatively ungrateful soil fails of rendering the annual tribute of plentiful harvests. Taking into consideration the natural advantages for manufacturing possessed by England and the United States, the inhabitants of the two countries appear to be on nearly an equal footing; and as a partial offset to the lower price of labor in England, the reduced cost of most of the raw materials for manufacture in the United States, and the more efficient exertions of the workmen there must be taken into account.

The whole energy of the great mass of the population of Manchester is concentrated upon the operation of the machinery connected with manufactures. Every person you meet in the streets is a manufacturer of something. Even the sign board of the undertaker, beneath which I daily walk, proclaims in staring capitals, that he is “a manufacturer of coffins.†” In passing along the streets,

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\*At Pittsburgh, in Pennsylvania, the price of a steam engine of eight horse power, is only 700 dollars, as appears from a report made to the Convention holden in New-York, in 1831. The description of engine here alluded to, is of the high pressure kind, without an air pump and condensing apparatus, which are rarely dispensed with here.

†This was also once a branch of the manufactures of New-England, from whence coffins ready-made were shipped to the West Indies during



the din of moving cog wheels and the buzz of spindles are frequently to be heard resounding from the interior of tall dusky brick buildings which border the flagged walks.

The very ceremony of a christening at church, like every thing else that is done here, is managed on a great scale. In all the parishes in England, a regular book of record is kept of the births, marriages, and deaths. To save the charge of extra fees to the clergymen, the poorer classes have the ceremony of christenings and weddings performed in the parish church on stated days, which greatly facilitates the labors of the officiating clergyman and clerk. On one of the Sundays that I attended the church, I remained to witness a public christening, and to observe the despatch with which in a business-like way, Christian names were given to fifty-three babies. The sexton assisted as a sort of marshal to arrange the host of god-fathers and god-mothers, who stood in multiplied ranks behind the bearers of the little subjects for the baptismal font. He evidently displayed as much zeal to preserve order in their ranks, and to cause every projecting toe of a shoe to be advanced to a proper semi-circular line, as a spirited militia corporal is sometimes seen to exhibit in his endeavors to arrange the straggling files at a militia muster in the United States. After the sexton had completed his task, the clerk and clergyman, both dressed in flowing silk robes, commenced their tour of duty. The clerk presents before each infant, in succession, a white basin filled with water; whilst the clergyman at the same moment inquires its proposed name of the person who bears it, and in the same breath pronounces the name aloud, and sprinkles a few drops of water upon its shrieking, writhing

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some sickly seasons there. They were packed up in nests like pill boxes, the smaller inclosed within the larger, with a view both to save freight, and to furnish all the variety of dimensions that might be required to suit the various sizes of the customers.



little face. He then advances to the next infant to repeat rapidly the same ceremony over it. At the close of each short ceremony, the deep hollow response of, Amen, is ejaculated by the clerk. So inattentive did the latter personage become to the solemn offices he was engaged in performing, that after twenty or thirty infants were christened, his head appeared bowing and swaying backwards and forwards at random, with the white portion of the upturned eyes only visible, while his Amen, like the beat of a clock, fell in regular cadence from his lips, as often serving for a preface as for the close of the short baptismal service pronounced over each infant.

The obligations or promises, usually made by god-fathers or sponsors at the baptismal fonts, to attend to the moral instruction of their god-children, are not singly repeated by each set of sponsors in turn; but the whole form is read by the priest, and responded to by the clerk, in the presence and in behalf of all the sponsors, who stand promiscuously in the rear ranks. No audible voice except that of the clerk breaks the silence, and no response is heard from any other person. The clerk thus apparently stands forth the conspicuous acting god-father to the whole multitude of little babies, by whom he is surrounded.—One of the bystanders near me, supposing this actually to be the case, expressed his astonishment that any one man should ever have been found in England willing to promise what the clerk had promised for such a multitude of children.

These parish records are often found of great utility in tracing lines of descent, thus settling contested cases of heirship to large estates. In the United States, where no other record than a leaf of the great family bible, or a loose sheet of paper ornamented with rudely engraved devices, is commonly made use of for registering the momentous family occurrences of births, marriages, and deaths, it

would be extremely difficult to adduce such evidence of a line of descent, as would be admitted in the English Courts. Very large estates are now held in chancery in England against the claims of American citizens, who cannot legally prove their descent from the original English emigrants.

In New-England, peculiar remissness prevails in regard to registers of marriages. Even the short written certificate, signed by the person who performs the marriage ceremony, is rarely called for by the parties. In case of the demise of the witnesses, it becomes necessary to rely upon a sort of presumptive evidence of a lawful marriage derived from the cohabitation of the parties. Indeed it is only by this sort of evidence that the greater part of the most respectable inhabitants of the United States can substantiate in a court of law their legal descent from their immediate parents, or show that they are not in the same class with him, who in legal phraseology is termed "*nul-lius filius*," the son of nobody. It is rather by tradition and circumstantial proof than by any legal records, that the oldest families of New-England can trace back the line of their descent to their ancestors, the Pilgrims of Plymouth, who landed there two hundred years ago. In a country where happily the laws do not allow of entailments, and the unequal distribution of estates by the acknowledgment of the right of primogeniture, contested cases of heirship rarely occur, and parish records are less necessary than they are in England.

Having a letter of introduction to the proprietor of one of the most extensive cotton-spinning mills in Manchester, containing nearly 90,000 spindles,\* he very civilly accom-

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\*Each of these spindles produces actually more yarn than the most skillful spinner could have made 60 or 70 years ago. Thus at this manufactory as much labor is accomplished by the aid of machinery as would have required 90,000 laborers to have furnished by the old mode of hand spinning on the single wheel. In Bolton, an adjacent town, it is stated that

panied me in a ramble over his vast works. The buildings are all of brick, in the form of a hollow square, the principal front of which towers to the height of eight stories, and the four outer fronts of the building measure more than 800 feet. The entrance is by a great gate, at which a porter is always in attendance to refuse admission to intruders from without, and to watch lest property should be conveyed furtively from within.

After passing the gate and beneath an arch formed under a side of the building, I entered the open court-yard or square, inclosed within the four interior walls of the manufactory. In the centre of this square is a sheet of navigable water bordered by a quay, on which canal boats may be seen discharging their freights of raw cotton and coals in the heart of the works, and receiving the packages of yarns. A tunnel or arched passage is made beneath the mill, to connect this interior basin with one of the principal canals which traverses a considerable part of England. Every possible facility is thus afforded for transporting the raw material to the very centre of the mill, and for shipping the manufactured goods in return to London or Liverpool.

In the preparatory process of picking over and assorting the sea island cotton, before it enters the machinery, there were more than 60 persons at work in one apartment, beating the flakes of cotton with sticks, in order to open them for more minute inspection. On suddenly entering this apartment, and viewing so many men and women, all simultaneously brandishing rods and beating the cotton, the loose locks of which flutter in every direction from beneath the strokes of the rods, descending with a deafen-

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there are two manufacturers, who have each 100,000 spindles employed on their account. These four spinning mills, including the two referred to in Manchester, yield as much as all the spindles in a considerable nation could have once accomplished.

ing clatter, you may readily suppose that you are witnessing the disorderly scene of a mad house. The dust and small particles of cotton, floating in the air in this room, are almost suffocating, and must prove most pernicious to the health of the workmen.

When the doors of the various long apartments are successively thrown open, you view the wheels revolving on long lines of shafts, and ranges of machines with the metallic brass bright and glittering, as if polished by some careful housewife. The heads of the numerous busy attendants are visible above the machinery as they move to and fro at their tasks. In going from one apartment to another the spectacle almost produces the bewildering sensations which are sometimes excited by the strange visions of a dream.

The apartments are all warmed by steam from the boilers of the engine, conducted through cast iron pipes, in some cases arranged near the floor, with the design of distributing the heat more uniformly. Threads almost as fine as those of the web of the spider, and almost as silently spun, are drawn out upon the spinning mules. The finest yarns are always spun upon mules, and the process is slow. The labor of three persons at a mule of 300 spindles is required for a week, to spin four pounds of sea-island cotton into yarn of the fineness of 300 hanks\* to the pound, at an expense for labor alone of about two dollars and a quarter for each pound of yarn produced. A respectable manufacturer in Manchester stated to me, that a single pound of sea-island cotton wrought into lace, had been sold for fifty-four guineas (about \$270.)

From these fine threads the delicate tissues are fabri-

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\*The relative fineness of cotton yarn is calculated by the number of hanks required to weigh one pound. A hank contains 840 yards, and No. 300 yarn, therefore, has a thread sufficiently fine to measure,  $840 \times 300 = 252,000$  yards, or 143 miles in length to one pound of the yarn !



cated, which are prized by the ladies, as being rather ornamental than useful. Unlike the texture of the wedding gown, which the good wife of the Vicar of Wakefield bought for the wear rather than for the looks, these light fabrics are lifted by the breath, or leave the form of beauty half revealed, enveloped in folds of transparent drapery. One bale of sea-island cotton, manufactured in this way, would produce nearly \$100,000—a sufficient sum to purchase two or three cargoes of the raw material.

This manufactory which gives employment, directly and indirectly, to nearly thirteen hundred persons, and rivals in magnitude and importance many national works, was erected by Mr. Murray, who removed to Manchester about forty years ago, and commenced his career as a common mule-spinner. The cotton manufacture was at first, as he stated, “almost all profit.” As competition gradually reduced these profits, he continued to enlarge his works; and the result in the aggregate, on a greater amount of production, he observed, has continued nearly the same. Separated from Mr. Murray’s mill only by a narrow street, is another cotton mill, of equal, or even of greater magnitude. I was informed that one firm, engaged in spinning coarse yarn, has during the last year manufactured upwards of six thousand bales of cotton. It appears from a published statement, that the number of large cotton factories in the immediate parish or town of Manchester, was in 1820, fifty-four—in 1823, fifty-six—in 1826, seventy-two—in 1828, seventy-three. But the whole neighboring country abounds in them.

The vast business of the production and manufacture of cotton originated from the most humble enterprises and inventions. A brief sketch of the successive improvements, made during a long course of years, will afford to the reader a more perfect conception of the present complete mechanism of a cotton mill, than a labored description of



the several machines which it contains. Few spectacles present a more impressive evidence of the successful exertion of human skill than the interior of a modern cotton manufactory, where all the varieties of complex wheel-work and machinery are admirably combined, and directed with suitable moving forces to so many different processes, each performing its assigned functions as if instinctively.

This perfected mechanism affords an instructive contrast with the rude implements still employed in Hindostan—the country in which it was supposed, a little more than half a century since, that the manufacture of cotton had attained great perfection. It is recorded that the Romans obtained their cottons from India, more than two thousand years ago; and it is well known, that until recently, England as well as the United States derived a considerable portion of their cotton fabrics from that region. The very names of several kinds of cotton cloths are derived from those of the places where they were made in India; such for instance as Calico, from Calicut, &c.

In Hindostan, the spinner still continues to draw the cotton from the distaff, on which it is loosely wound, with one hand, whilst with the other hand he twirls the spindle suspended dangling at his side; and even in Italy women were once seen economically employing their time whilst walking about the streets, by twirling the same kind of spindles. The term, *spinning street yarn*, probably was derived from this perambulatory mode of manufacture. The loom of Hindostan “is composed of a few sticks or pieces of bamboo; and when it is in operation it is placed under the shade of a tamarind or mango tree, with the balance fastened to one of the branches. Two loops underneath the gear, in which the weaver inserts his great toes, serve as treadles; and the shuttle, formed like a netting needle, but of a length exceeding the breadth of the

cloth, is used alternately to draw through the weft and to strike it up into the web. The loom has no beam, the warp is laid upon the ground, the whole length of the piece of cloth. Upon this primitive machine, the Asiatics produce those muslins which have long been subjects of admiration for their exquisite beauty and the fineness of their texture."

It was only as late as the year 1760 that important improvements were attempted in the manufacture of cotton in England. Before that period, the warps were formed of linen thread imported from Ireland, and the cotton was employed only for the weft. In this state of the manufacture, all the operations were of a household character, the cotton being carded by hand cards in the cottages, spun upon the common single spindle, and woven by members of the same family. The younger persons of the family were employed in the carding and spinning, and those of more advanced age, at the loom.

In the process of the household manufacture, the fibres of cotton were disentangled and prepared, by means of thickly studded wire teeth fixed in sheets of leather, which were nailed to flat pieces of boards, as is still practised.\* One of these cards was placed on the knee with the teeth upwards, and another card was drawn or scraped over it repeatedly, with a flake of cotton between them; which operation diffused the cotton evenly over the surfaces, and disentangled all the knotty parts. This was a slow and laborious process, and in winter, the fireside was surrounded by boys and girls engaged at this task. The first improvement made was to enlarge the size of the lower card, and to suspend three or four cards over it by cords from the ceiling, all so arranged as to act simultaneously. By

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\*Before wire cards were invented, it is stated that the fuller's thistle, or teasel, was used for loosening and opening wool, to prepare it for spinning.

this means a girl could perform thrice as much work as before, and with greater ease. This plan was superseded by that invented by James Hargreaves, who nailed the sheets of cards directly upon cylinders, and caused the wire teeth to act against each other on the same principle as they had previously been made to do. The cylinders were stopped from time to time, to allow the attendant to strip off the carded cotton, in loose downy rolls about as large as the finger, and ten or twelve inches long, prepared thus for the use of the spinner. Richard Arkwright, by profession a barber, and afterwards knighted for the important services he rendered to his country by means of his inventions, with the co-operation of Hargreaves, constructed a comb furnished with fine metallic teeth; and fixed it to vibrate by a crank, to take off the cotton from the cards by slight and reiterated strokes. He thus rendered it unnecessary to stop the carding machines to take off the cotton. But he made a still more important improvement by covering the cylinder with cards set in the form of filleting, extending around the cylinder, to which the comb was applied; thus leaving no break or spaces devoid of teeth as had been before left, where the cards were nailed in sheets upon the cylinder. The carded cotton by this arrangement came off in a continuous fleece, and being drawn by rollers through a round tube, formed the rudiment of the endless roving as practised at the present day. This was a capital invention, for the spinners were previously under the necessity of taking each of the short rolls or pieces of carded cotton between their fingers to splice them together to form the continuous thread, which was now at once obtained from the carding machine, and preserved throughout all the subsequent processes.

After some of these improvements in carding had been completed, it was found difficult to procure a sufficient

number of spinners to spin the cotton by hand. In the mode then commonly practised, a single spindle was made to revolve by a band applied to it from the rim of a large wheel, called from this connexion, the Spinning Wheel; which was turned by the hand, whilst the roll of cotton, attached to the horizontal spindle, was extended or drawn out by the left hand. In the history of these improvements, it is related that James Hargreaves, a poor and illiterate weaver, produced the first spinning machine; his attention having been directed to this subject in 1767, when he obtained the first idea of the present vertical or perpendicular arrangement of the spindles, from the accidental overthrow of a spinning wheel by his romping children. The wheel being upheld clear of the floor by the frame work, continued to revolve by the momentum which had been imparted to it by the spinner, who still held the thread until it became sufficiently twisted by the prostrate spinning wheel. Hargreaves constructed his first rude machine of eight spindles, by means of his pocket-knife. To imitate the pressure of the thumb and finger of the spinner, for the purpose of seizing at once each of the eight threads to be extended or drawn out during the process, he split the stalk of a briar, and caused the threads to pass through the cleft, which on recoiling held them fast. This machine he called his Jenny, after the name of his daughter, for aiding whose handy work it was constructed. His wife having imprudently boasted that the machine had made a pound of yarn in a very short time, a public excitement was produced, a mob was soon collected, and the furniture of the inventor as well his obnoxious machine was sacrificed to their fury. Hargreaves afterwards abandoned Blackburn, the place where he had made his first experiments, and removed to Nottingham, where Arkwright was then settled. His machine was afterwards increased to 120 spindles, and one



person was by this most valuable invention enabled to do the work of an hundred. His fate was like that of many English inventors ; “ being persecuted by the mob on the one hand, and deprived of his rights by the manufacturers on the other, he was suffered at length to die in a workhouse.”

Arkwright continued his experiments on spinning until he completed his most useful improvement called the Spinning Frame, and afterwards the Water Frame, from being operated by water power. It differed from the Jenny by being furnished with rollers to draw in the roving of cotton between them, to be passed to the spindle uniformly, and without stopping the spindles to make the successive drafts of the thread by repeated processes of spinning. Furrows were formed on his iron rollers to cause them to take hold of the carded cotton, without allowing it to slip. He thus succeeded in drawing forward a regular supply of it to the spindle upon which it was to be spun. Arkwright stated that he derived the first hint of this invention from seeing a red-hot iron bar drawn in regularly between two rollers in an iron rolling mill.

The attention of Arkwright was turned to a different mode of spinning from that adapted by Hargreaves and applied to his Jenny ; the former having founded his improvements on the principle of the flax wheel, with a bobbin and fly attached to the spindle, and the latter having employed the plain naked spindle used in the wheel for spinning wool or cotton. Thus it appears that there are two kinds of the domestic one-thread wheel, which have both become so nearly superseded by the improved machines of modern woollen, cotton and flax mills, that they may probably ere long be deemed, from their rarity, objects of curiosity. After drawing out and twisting a couple of yards of thread, the jenny is stopped, and the motion of the spindle is reversed to wind up the thread



around it, and to prepare for another draft of a couple of yards more; but on the flax-wheel, the bobbin or little grooved cylinder of wood is slipped loosely over the spindle and would turn with it by the slight friction created by its recumbent position, were it not held back by the tension or resistance of the thread, which is by this friction kept tightly extended, and is wound upon it without intermission as fast as it is spun. This machine therefore goes on spinning steadily, and the spindles are only stopped to take out the bobbins after they become filled with yarn.

It still became necessary on Arkwright's spinning frame to extend or draw out the roving or rudiment of the thread to render it finer, as had been performed by the fingers of the spinner, on the one-threaded spinning wheel. This last difficulty was overcome by adding another set of small iron rollers, the lower one of each set being furrowed or fluted, and the upper one covered with leather to enable them to hold the thread fast. The roving is regularly drawn forward by the first pair of rollers, and suffers only a slight compression between them; but the second set of rollers being made to revolve with a much quicker speed than the first set, it is evident that the roving must become extended or rendered thinner and at the same time longer and finer.

Having experienced the advantages of drawing out the cotton roving to a more extended and attenuated filament by means of these rollers, Arkwright constructed a machine furnished with sets of rollers expressly for this purpose, which is still in use and is called the Drawing Frame.—This drawing frame serves admirably to equalize the several cardings or rovings, which by its means are doubled side by side, many hundred fold, while they are proportionately extended in length during the process. Several cardings coiled up in tin cans are set up to each pair of rollers, which combine and compress them into one; and

these last are repeatedly subjected to being doubled and drawn out, until every fibre of cotton is straightened longitudinally in the filament of roving, and all inequalities in thickness are removed.

Still a fresh obstacle now occurred from the very delicate and slight adhesion of the fibres of the attenuated roving, formed by his new drawing frame; which he obviated by placing upon a revolving pivot the tin cans into which the roving fell, after issuing from between the last set of rollers. These cans were thus made to revolve like spindles, and to give a sufficient degree of twist to the roving to fit it for the spinning frame.\*

It was for this perfect and beautiful application of the rollers to the spindle of the common flax wheel, with its fly and bobbin, that Sir Richard Arkwright obtained his first patent, and laid the foundation for the wealth and fame which crowned his exertions. Having included in his claims for the second patent the original application of the crank and comb, as well as of that of the card filleting wound around the cylinder to produce a continuous or perpetual roving, to which last, and to the rollers before described, his claim of originality of invention was not disputed, he became entangled in litigation, and his sec-

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\*As a substitute for these revolving tin cans, the machine called the Double Speeder, from its being susceptible of revolving with double the velocity of the cans, has of late years been generally adopted. It is the same machine in principle as the spinning frame of Arkwright; but it is made larger and heavier to receive the more bulky roving.—In the United States both the revolving cans and double speeder are frequently dispensed with; and the roving is used without being strengthened by being slightly twisted. The compression of the roving by passing between the rubbing surfaces of two belts moving swiftly in opposite directions, or between two revolving plates of metal, or even through a hollow revolving spindle to twist it and untwist it again in its progress, has been found to impart sufficient tenacity to the roving to render it suitable for being used on the spinning frame. This simple contrivance is attended with a material saving of labor and cost of machinery.

and letters patent were cancelled by a decree of court, on the ground of his not having been the original inventor of the crank and comb. By his inventions and improvements he secured, however, a vast fortune for himself, and laid open most valuable sources of wealth for the benefit of his country, by drawing from all the nations of the earth their tributary gold, to be offered in exchange for the superior products of the labor-saving industry of Englishmen.

In 1775, Samuel Crompton succeeded in making a still further improvement in spinning, by combining the naked spindle and moveable frame or carriage of Hargreaves' spinning Jenny with the stationary fluted rollers of Arkwright's spinning machine. This invention having been effected by compounding improvements borrowed from two distinct kinds of machines, the name of "mule" was given to it, which it bears to this day. Crompton left the use of this very valuable invention free to the public, in consequence of which Parliament bestowed on him a grant of £5000.

The mule is considered preferable to all other spinning machines for making the finest yarns, although for coarser sorts other contrivances have since been introduced with success. By means of this mule, a single pound of cotton has been spun into a thread of No. 350 yarn, extending more than 160 miles in length. As constructed by Crompton, it was made to be operated by hand; but in 1792 William Kelly of Glasgow contrived to operate it by the power of steam or water, and thus enabled one spinner with the aid of a couple of boys to operate two mules containing seven hundred spindles;—truly a most wonderful advance of effective labor when contrasted with the humble product of a solitary spindle.

In the process of weaving, it was originally the practice of the weaver to extend his arms across the web to throw the shuttle from one hand to the other, alternately using the disengaged hand to strike in and close up the weft.

When the cloth was woven of a greater width than the weaver could conveniently compass with his extended arms, two persons were always employed at each loom, one to throw the shuttle from right to left, and the other from left to right. The *fly-shuttle* was first invented, to enable a single weaver to fabricate cloth of the broadest width. He was enabled to throw the shuttle by means of a short stick, furnished with two cords or thongs attached to the end of it, like two distinct whip lashes, and terminating on each side of the cloth in connexion with a moveable piece of tough hide, fitted to hurl the shuttle alternately back and forth across the web. By this simple contrivance the weaver caused the shuttle to fly so swiftly, that it acquired from this circumstance its current name of "the fly-shuttle." Not only were the widest cloths now fabricated by one weaver with facility, but also double the quantity was produced by them in the same time.

The various improvements in carding and spinning had caused such an unprecedented production of yarn, that weavers could with difficulty be found to make it up into cloth. Mr. Cartwright, a clergyman, hearing accidentally of the great inventions made in the machinery for carding and spinning cotton, and of the difficulty of finding weavers, turned his attention to constructing a loom to be moved also by machinery, in order that one weaver might manage two or three looms. He succeeded so far as to take out a patent for his invention in 1787; but owing to the imperfect manner of preparing the webs for the looms, it was found that a weaver could only attend one loom, and the invention consequently was neglected, until another new machine was constructed in aid of the power-loom, expressly for dressing and preparing the webs for it. Fresh impulse was imparted to the productive powers of the neglected machine, for a girl could now weave three



times as much cloth as could have been done before by the best hand weaver.

After this period the number of power-looms increased with wonderful rapidity. So late as the year 1813, it is stated, there were few or no power-looms in Manchester. In 1818, there were only about 2000 of them in operation in this great manufacturing town, and in the adjacent villages. In 1821, the number had been increased to 5732; and in 1825, in the parish of Manchester alone there were upwards of 20,000.\*

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\*In 1827, it was computed that there were in the whole United Kingdom, about 50,000 power-looms, 38,000 of which were in England, and 8000 in Scotland. The gradual increase in the subsequent five years, at a very moderate computation, would be at least 10,000, making a total of about 60,000 power-looms in operation in 1832, in Great Britain.

It requires about a one-horse-power, of the steam-engine standard, to operate 12 looms, with the machinery for dressing the webs. To keep in motion the above number of 60,000 power-looms would therefore require a steam power rated equal to that of 5000 horses employed during twelve hours each day; but, in reality, equal to the actual force of about 10,000 ordinary horses, which animal is found capable of performing effective labor during only about eight hours of each day. Thus is exhibited at a glance the surprising economy of human strength brought about by the single labor-saving contrivance of the *power-loom*.

But the economy of human force or strength is of very inconsiderable importance in comparison with the increase of production at a reduced cost. Taking the average at one female to attend two power-looms, and frequently one person attends three of these machines, 30,000 females are enabled to perform the work of about 60,000 men, who were usually the description of weavers employed on the hand looms. Omitting to estimate the far greater production of the power-loom, by way of offset to the increased expence of the steam-engine and machinery, the wages of 30,000 female power-loom weavers, at 8 shillings per week, amount to £12,000 per week; and the wages of double the number of men employed as hand weavers, would have averaged about 18 shillings a week each, or £54,000 in the aggregate; the difference being about £42,000 per week, or above £2,000,000 (upwards of 10,000,000 dollars) per year, saved in the expenditures merely for weaving in England by the introduction of the mechanism of the power-loom.

Whilst one admires this astonishing effect of machinery, a sigh almost



In the United States the introduction of the power-loom was hailed as affording an important relief to those branches of manufactures, in which it was capable of being employed. In that comparatively thinly populated country, the difficulty of finding weavers became so extreme, as nearly to put a stop to the extension of the cotton-manufacture, the webs having been in some instances scattered over a whole region of country, frequently at a distance of two hundred miles from the manufacturers; and nearly

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involuntarily escapes, in commiseration of the distress thereby caused to the miserable individuals whose humble labors it has interrupted. Few, perhaps, of those in the enjoyment of ample means of gaining their bread, can imagine how poignant are the mental sufferings of the poor English weaver when he receives his last weekly stipend on a Saturday evening, and hears the stunning declaration from the lips of his employer, that his services are no longer required; whilst at the same moment the sound of the rattling machinery reaches him at the threshold, and discloses the appalling fact that his "vocation is gone." Ignorant of all other modes of gaining a livelihood, and with no hope of obtaining other employment, his elasticity of mind gives way. When his thoughts recur to his dependent family and to the prospect of their hopeless destitution, his courage fails him, and like a floating wreck drifting on the tide, he goes to his cheerless home, a crushed heart-broken man. Under such a state of feelings, it certainly cannot be deemed surprising that he should in his desperate fortune be easily actuated to assist in destroying the machines which deprive him of bread.

Even in remote India, the country whence originated the cotton manufacture, the poor Hindoo has felt the effect of English machinery in robbing him of his accustomed employment at his primitive distaff and spindle; and he has yielded in the competition, although subsisting on the most economical fare of a little rice, and at the lowest possible rate at which a human being can be sustained in a condition to perform labor. Bishop Heber remarks, that one of the districts of the east, once prosperously engaged in the manufacture of cotton cloths, has rapidly declined in population, and has already been left almost a solitary place, and a retreat for wild beasts. Upon those shores are now landed cargoes of the very same description of cotton cloths, transported from England and even from the United States; to both of which countries similar fabrics were once exported from India as a most profitable freight to fill the spacious holds of many huge East India ships,

a year elapsed before some of them were returned ;—when the price paid for the mere weaving was as much as the present actual value of the same fabrics. The power-loom, from its requiring a very considerable expenditure of moving force to operate it, is peculiarly adapted to be most successfully employed in the United States, where it brings into profitable action the vast water-power, which is there so abundantly available.

It has been computed that there are upwards of two millions of spindles employed in the manufacture of cotton in Manchester and in the country immediately adjacent. The capital invested in machinery and in the various branches of business related thereto in Great Britain, has been estimated at an amount exceeding 65,000,000 pounds sterling or about 300,000,000 dollars. Mr. Huskisson several years ago calculated the proceeds of the cotton manufacture to have been of an aggregate value of £36,000,000 annually, or about 179 millions of dollars.—This is the astonishing result of the successful application of labor combined with the operation of improved machinery in the manufacture of a single staple material. Surely no one can investigate these prolific sources of national industry, and afterwards wonder at the unexampled wealth of England, a country smiling like a garden under the most perfect agricultural improvements, and abounding in all the most elaborate inventions of modern science. A writer, in the *Edinburgh Philosophical Magazine*, made the following calculations to illustrate the effects of English manufactures in 1823—before the late unprecedented extension in this branch of business took place. “After deducting the cost of raw materials imported, 672 millions of pounds sterling (3,282 millions of dollars!) have been gained in the last thirty years, since 1793, for wages and profit produced by British industry, and received from foreign nations. During the continental wars in which

England was engaged, the sum added to the national debt by loans was 569 millions, which it thus appears was exceeded upwards of 100 millions by the amount received from foreign countries for the ingenuity of English artisans, and the industry of the English laborers!" During this period the manufacturers were bringing into the country a greater amount of wealth than the most profuse and spendthrift ministers lavished in foreign wars and subsidies, to be funded by the chancellor and provided for by future ages.

It can hardly be believed, indeed, at this late day, how great were the profits which resulted from the employment of Arkwright's machinery, when first invented.—It was then the unequal competition between the manual labor of foreign nations, and the labor-saving machinery of England—the lever of Archimedes, by which he boasted he could lift the world, against the efforts of naked hands. An English child employed at a machine was able to produce fabrics of greater exchangeable value than one or two score of able-bodied men on the adjacent continent, or in the United States. One of the oldest cotton manufacturers in the latter country, who commenced his business at a period when the richest portion of the harvest of wealth had been gathered in England, has declared, that he should prefer to receive merely the profits of one of his old original cotton-mills, after deducting all the cost of stock, labor and other charges, rather than the unconditional gift of the whole product of cloths from a mill of the same number of spindles at the present day. Cotton yarn of No. 100, was sold in England in 1788 at about 36 shillings sterling a pound, equal to eight dollars and three quarters per pound; and the same kind of article can now be bought in the same country for only three or four shillings, or about seventy-five to a hundred cents,

the depreciation in price being nearly seven dollars per pound!

In connexion with the subject of the cotton-manufacture, it may be interesting to take a transient view of the equally rapid and wonderful extension of the culture of cotton—the great agricultural product forming the staple material; which after being elaborated by the machinery and industry that has been described, furnishes nearly half of the clothing to the inhabitants of the civilized world.

The cotton plant itself is a native of the three continents of Asia, Africa, and America, and flourishes in a broad zone of climates. In Hindoostan and South-America, it shoots up into a tree with lofty branches, and annually produces its bursting pods as a spontaneous crop for the inhabitants, who gather the locks of cotton with no other labor than that of the harvest. In more northerly latitudes, it becomes dwindled into an annual plant, requiring careful tillage, and the vigilant attention of the cultivator during the seed time, as well as the harvest. The product of the cotton plant seems to vary in quality from local peculiarities of heat and moisture; as that with the black seed, which is raised in the vicinity of the ocean on the sea-islands of Georgia, loses its superior excellence of staple when transplanted to the interior country. There are various shades of color to cotton, from the natural buff or yellow of the Nankin, and the rich cream color of the sea-island and best upland cottons, to the pale white of the inferior qualities.

In the early stages of the cotton-manufacture in England, the supply of the raw material was derived from the countries of Asia bordering on the Mediterranean, and from the West-Indies. In 1705 it appears that only 1,170,000 pounds of cotton were imported into England; and in 1775, at the period of the commencement of the



inventions to which we have been alluding, only 4,764,000 pounds were imported. Fifty years after this, 820,000 bags were landed in Great Britain in one year. About 72,000 of these having been re-exported, there remained 748,000 bags of cotton to supply the annual consumption in this single Island.\* Of this vast quantity, the greater part was brought from a remote country where in 1784 not a single bag of cotton was produced as an article of export.

In 1785 it was ascertained by the English custom-house officers at Liverpool that an American ship had discharged upon the quay eight bales of cotton, which being then an article of import never before brought from any part of the United States, were seized, upon the supposition that they had been brought circuitously from some of the English West-India islands, contrary to the rigid navigation laws, designed to encourage British shipping. For several years subsequent to this period, the culture of cotton was neglected in the United States on account of the great labor required to free it of the seeds and motes by manual labor; but the invention of the cotton gin, for cleaning the raw cotton, gave in 1793 a new impulse to the culture in the United States—quite as great as that given to the manufacture of the same staple material by the inventions of Arkwright. Indeed, unaided by the preparatory labors of the cotton gin, the machinery of Arkwright would have been divested of nearly half of its value.

Less fortunate, however, than his predecessor, Ark-

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\*In the course of one year 63,000 bales of cotton were landed in the single port of Providence, in the State of Rhode-Island, to be manufactured in the immediate vicinity of that town, being about one-twelfth of the whole annual consumption of Great-Britain. The present annual production of cotton in the United States is computed at about a million of bales, or a million of pounds to every day of the year. The domestic consumption of this staple in the United States is estimated at about one-fifth of the whole amount of it produced.



wright, the inventor of the cotton gin, reaped a humble personal benefit from his most useful machine, although it became the means of adding millions annually to the productive industry of his native country. Entangled in costly lawsuits, which are usually the first fruits of every meritorious invention, he expended in one quarter in litigation, what he obtained in another by the sale of his machinery, and passed most of his days in profitlessly defending what his genius had originated. The brief history of his life, blended as it is with the example of a great mind struggling in adversity against powerful combinations of individuals, aided by a disgraceful interference of the Legislature of one of the United States, cannot fail of exciting in the mind of the reader the strongest sympathy in favor of the inventor, and indignation against his oppressors.

The rapid increase of the population of Manchester establishes a further proof of the prosperous diffusion of useful employment and consequent facilities for human subsistence. Within the last ten years, the population of this town has been increased by an accession of about 40,000 inhabitants, being a ratio of increase of above 35 per cent. Although the population within the circumscribed limits of the immediate town of Manchester is rated by the census of 1831, at only 142,026 inhabitants, yet including the population of the suburbs within the circuit of two miles, it contains 233,380 inhabitants; and within nine miles of this centre of manufacturing industry, a million of people have concentrated their habitations. The county of Lancashire contained, in 1821, 1,052,200 inhabitants, and in 1831, the returns are given 1,335,000; showing a rate of increase of about 33 per cent in 10 years—which is fully equal to that of some of the most prosperous districts of the United States.

When all the machinery of the cotton mills is simulta-

neously stopped at the usual hours of intermission, to allow the laborers to withdraw to their meals, the streets of Manchester exhibit a very bustling scene; the side walks at such times being crowded by the population which is poured forth from them, as from the expanded doors of the churches at the termination of services on the Sabbath in the large cities of the United States. On first beholding these multitudes of laborers issuing from the mill doors, I paused to examine their personal appearance, expecting to behold in them the sickly crowd of miserable beings, so vividly described in Espriella's letters, as "keeping up the *laus perennis* of the devil, before furnaces which are never suffered to cool, and breathing in vapors which inevitably produce disease and death." In this respect my anticipations were disappointed; for the females were in general well dressed, and the men in particular displayed countenances which were red and florid from the effects of beer, or of "John Barleycorn," as Robert Burns figuratively called his favorite potation, rather than pale and emaciated by excessive toil in unwholesome employments in "hot task houses." Every branch of business being in a prosperous state when I had an opportunity of noticing them, they may have appeared, perhaps, under favorable circumstances, and in the possession of more than their usual share of comforts and enjoyments.\* The children employed in the cotton mills appeared also to be healthy, although not so robust as those

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\*The following statement of the prices of labor will show that the laboring classes were not in 1825 actually depressed to the lowest degree of wretchedness, as is by many supposed. The rate of wages at present is not materially lower than the sketch here presented.

To this list of prices of labor in England, has been added the prices of similar labor in France and the United States, together with the cost of coals and of wheat, which form the basis of manufacturing capabilities. By this Comparative Table, which has been formed with much care, the relative advantages for producing cheap manufactures, possessed by the

employed as farmer's boys in the pure air of the open country.

three principal nations of the earth, may be estimated by those who are curious in the investigation of this subject.

*Comparative Table of Rates of Wages, in England, France, and the United States.*

<i>Wages of</i>	England.		France.		U. States.	
	<i>s.</i>	<i>d.</i>	<i>cts.</i>	<i>cents.</i>	<i>cents.</i>	<i>cents.</i>
A common day laborer per day, about	3	0	73	37 to 40		100
Do. do. with steady employment	2	6	60	35		80
Carpenter	4	0	97	55	75	145
Mason	4	3	103	62	85	162
Mule Spinners in cotton mills	4	3	103	75	85	90 to 137
“ “ in woollen mills	3	10	93	45	55	90 137
Weavers on hand looms	3	0	73	37	50	80 95
Boys 11 or 12 years old, per day	1	0	24	14	17	25 30
Women in cotton mills, per week	8	0	192	145	175	250 300
“ woollen mills	8	0	192			
Maid servants in private families, per week, board found }	2	6	60		100	133
Machine Makers and Forgers, best, per day }	6	6	158		150	167
“ “ ordinary	3	9	90		100	117
Children, piecers in mills, for mules and billeys }	0	7	14		20	30
Overlooker of carding rooms	5	6	135		108	150
Slubbers of woollen roving	4	0	97		80	100
Experienced workmen to attend shearing machines and gig mills for woollens }	3	4	82		80	117
Firemen for steam engines	3	9	91		100	125
1827. Price of Coals for steam engines, per ton }	9	0	220	700†	N. Y.   700	Pitsb. 106
Wheat (per bushel of 60 lbs.)	7	4	179	117	96	49

\* *Manchester.* † *Louviers.*

When the work is done by the piece or job, and individuals are thus incited to greater efforts, the wages earned commonly exceed those noted in the table.

According to an authenticated statement published in the Manchester Guardian, the wages of calico printers employed in one of the principal print-works have averaged, during a period of four years from June, 1827, to June, 1831, £1 10s. 10½d. per week, or about \$1 25 cents per day.

The following abstract shows the rate of wages paid carpenters and masons in England during the last century; from which it appears that the present price of labor, paid in coin, is about double of what it was an hundred years ago. During the suspension of specie-payments by the Bank of England, previous to 1815, wages were nominally enhanced in

To preserve small children from being subjected by the cupidity of their employers, to a share of labor too severe for their years, Parliament, by statute laws, has prohibited their being employed longer than 12 hours per day.

By the newly proposed regulations established by Parliament in 1831, the hours of labor in mills for manufacturing Silk, Cotton, Wool, Flax, &c. are as follows.

No person under 21 years of age shall be allowed to work in the night—that is, between half past eight o'clock in the evening, and half past five A. M.

No person under the age of 18 years shall be employed more than 12 hours per day and 9 hours on Saturday, (excepting in fulling mills and in finishing woollen cloths,) equal to sixty-nine hours per week.

In case of loss of time by drought, or damage to steam engines, the proprietors of mills shall be allowed to work 12 hours on Saturday, and one hour per day as additional labor.

No child shall be employed in any description of work in any mill until 9 years old, except in silk mills, where they may be employed at 7 years of age.

These are some of the proposed regulations devised by humane English Statesmen to protect children from being overworked, and to allow them some little time for recreation and instruction.

At times, when there is an uncommon stagnation in

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proportion to the depreciation of the paper circulating medium substituted for gold and silver. What has been the cause of this advance of wages on the basis of a sound currency, is left for political economists to decide. Whether it may be attributable to the greater abundance of precious metals produced from the South-American mines, or to any other cause, it is certain that the manufacturing operations of England have drawn thither the precious metals from all other countries, and rendered them abundant, and laborers comparatively more scarce.

	1780.	1800.	1805.	1810.	1815.	1825.
Carpenters,	2s. 6d.	2s. 10d.	4s. 6d.	5s. 6d.	5s. 6d.	4s.
Masons,	2s. 6d.	2s. 10d.	4s. 10d.	5s. 2d.	5s. 9d.	4s. 3d.



business, much individual suffering occurs from a partial suspension of the operations of the manufactories. But it is rare that this suspension of labor, and the severest privations for want of employment, occasion much reduction in the rates of wages. So many combinations are formed among mechanics of every class, and so fearful are they that on the revival of business they may not be able to recover their former rates of wages, that funds are reserved by clubs of workmen in each distinct branch of manufacture, to support such members as may be deprived of their employment, in total idleness, rather than to submit to a general reduction of prices. They seem well aware, that in most cases, without an improvement in trade, the comparatively trifling diminution of their wages would not of itself be a sufficient inducement for their employers to resume operations.

The extensive funds raised for this object by clubs of fellow-workmen, and their perseverance in the contest between the employers and the employed, have furnished some interesting and remarkable instances of the resolution or obstinacy of Englishmen in persisting, often to their manifest mutual disadvantage, in carrying their resolutions into effect. In Manchester, one of the "turn-outs," as it is here termed, of the mule spinners, was continued for nearly eight months, during all of which time several thousand persons were supported in idleness by funds contributed from spinners in adjacent towns. In Stockport, the actual loss of wages to the operatives and of the profits on the employment of their mills to the manufacturers, from a similar suspension of business, was estimated, on one occasion, at upwards of £85,000, or above 400,000 dollars. In another instance a manufacturing district never fully recovered from the shock occasioned by the losses and removals of families. The workmen usually succeed in resisting attempts to reduce their wages when-



ever they can hold out without being starved into compliance, as the very circumstance of the stoppage of the mills, by rendering the goods scarce, after a time commonly augments the price of them ; and the manufacturer is induced at last by his very cupidity to avail himself of the improvement of the markets and to abandon the contest.

The abundance of wild and unappropriated lands in the United States, forms the certain resource of the mechanics, and indeed of all other classes of workmen, when thrown out of employment by any of the vicissitudes of business, and serves as a sort of balance wheel to regulate fluctuations in the prices of labor.

There appears to be a greater difference between the quantity of the necessaries of life which a laborer obtains for his day's work in England, and what a similar laborer obtains in the United States, than there is between the nominal pecuniary standard of value. With an equal amount of wages, the mechanic in the United States may purchase nearly double the quantity of bread and other provisions necessary for himself and family that the English mechanic can purchase in England. Beef now sells here at from 13 to 17 cents per pound ; bread 5 cents per pound. The day laborer for his three shillings earns 16 pounds of bread and 5 pounds of beef. In the New-England and Middle States, the best pieces of beef sell for about 8 cents to 9, and bread  $3\frac{1}{4}$  cents per pound. Such turkeys as may often be seen in the hand of the American mechanic, on his return from market, would cost here three dollars or more ; and of course are beyond the means of most of the laboring classes in England. Provisions of the coarser sort are also much dearer in Manchester than in the United States, from being more generally consumed by the poor. A sheep's head and offal, which may be bought in the United States for 8 or 10 cents, and are there

frequently thrown away for the want of a purchaser, will sell here for 30 to 50 cents.

On account of these high prices, the laborers are under the necessity of living here much more economically on a stinted and inferior fare. In consequence of the heavy taxes and tithes, and other exactions, many of the very manufactures of England are retailed in her own shops for home consumption, at higher prices than they are sold for in the shops of the United States. Various fruits, such as apples, melons, &c. which in England constitute the luxury of the rich, and are cultivated in green houses and under the shelter of lofty brick walls constructed expressly for this object, are so abundant in the United States as to be found almost equally on the tables of the poor and of the rich. The sum of the enjoyment within the reach of the mechanics of the two countries appears, therefore, to be greatly in favor of those of the United States.

The most highly colored sketches of the moral depravity and vices of many of the laboring classes of Manchester, fall short of the reality. A stranger, if he walk leisurely through some of the streets during pleasant evenings, is frequently addressed by abandoned females, who press their solicitations with earnestness, and even take uninvited possession of the arm, should the position of the stranger's bended elbow happen to offer a loop favorable to their design. Unless, indeed, peremptorily repulsed at once, they acquire assurance, and press their importunities with a shamelessness, that can only be the result of long practised habits of vice.

The manufacturing operations of the United States are carried on in little villages or hamlets, which often appear to spring up as if by magic in the bosom of some forest, around the water-fall which serves to turn the mill wheel. These manufacturing villages are scattered over a vast extent of country from Indiana to the Atlantic, and from

Maine to Georgia. A stranger, travelling in the United States, commonly forms but an imperfect estimate of the extent of manufacturing operations carried on in the country. Where steam engines are in use instead of water power, the laboring classes are collected together, to form that crowded state of population, which is always favorable, in commercial as well as in manufacturing cities, to the bold practices of vice and immorality, by screening offenders from marked ignominy. In the narrow circle of a small community or country village, the finger of public scorn and disapprobation is pointed at the vicious and forms a repulsive circle around them. Intercourse with their former companions becomes, in a degree, cut off, and they find not, in a village, a sufficient number of new ones of vicious character, to countenance their indulgence in a course of depravity. But in a place like Manchester, in addition to the vast manufacturing population, there is a great influx of strangers, of boatmen from the numerous canals which centre here, and also of the various workmen from the machine shops, founderies, and other subordinate manufactories, forming a population as before stated, of nearly 150,000 persons.

In most of the manufactories in the United States, sprinkled along the glens and meadows of solitary water-courses, the sons and daughters of respectable farmers, who live in the neighborhood of the works, find for a time a profitable employment. The character of each individual of these rural manufacturing villages, is commonly well scanned, and becomes known to the proprietor, personally; who finds it for his interest to discharge the dissolute and vicious.

The proprietor of a manufactory in Manchester has many hundred persons daily entering his gates to labor, of most of whom he does not even know the names. He rarely troubles himself with investigations of their conduct

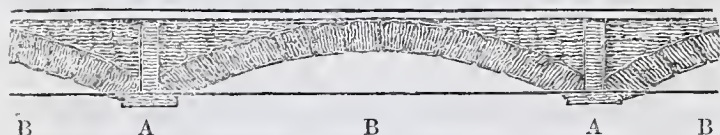
whilst they are without the walls of his premises, provided they are reported to be regular at their labor whilst within them. The virtuous and vicious females are thus brought into communion without inquiry and without reproach. The contamination spreads, and the passing traveller is induced to pause at the sight, like Southey, in his letters of Espriella, to denounce the sources of present wealth, however overflowing and abundant, whilst the enriching stream is contaminating, and undermining the best interests of man. Whilst he sees plenty scattered over a smiling land, and every prospect pleases, he may sigh on finding that "only man is vile." God forbid, however fondly the patriot may cherish the hope of increasing the resources of his country by opening and enlarging the channels of national industry, that there ever may arise a counterpart of Manchester in the New World.

It may be intended as a blessing that an all-wise Providence has denied to the barren hills of New-England the mines of coal, which would allow the inhabitants to congregate in manufacturing cities, by enabling them to have recourse to artificial power, instead of the natural water power so profusely furnished by the innumerable streams, that in their course to the ocean descend over beds furrowed in the rocks of an iron bound country.—Whilst a cold climate and an ungrateful soil render the inhabitants from necessity industrious, thus distributed in small communities around the waterfalls, their industry is not likely to be the means of rendering them licentious; and of impairing the purity of those moral principles, without which neither nations nor individuals can become truly great and happy.

Several of the Manchester mills are constructed fire-proof. One of these fire-proof cotton mills is of itself an object of curiosity. All the beams to support the floors, and the pillars to sustain the beams, and even the rafters, are



made of iron. To obtain the advantage of the greatest strength from a given quantity of metal, the beams are made very thin, not above three-fourths of an inch, or one inch thick, whilst their depth in the direction of the perpendicular pressure of the floors, is 12 or 14 inches. Upon the under edge of each metallic beam is a ridge or flanch projecting on each side, cast of one piece with the beam, and serving as shelves for the floors to rest upon. In place of joists extending horizontally from beam to beam, brickwork is substituted, with buttresses resting on the projecting flanches, and sweeping over in short spans from one beam to the next, thus forming a wavy ceiling of successive ranges of arches. To lay a smooth floor, the cavities between the tops of the rounded arches are levelled off by the masons, and are flagged with smooth flat stones. This arrangement is shown in the following sketch.



The iron beams, A A, from their thin horizontal dimensions, would soon be broken by the lateral thrust of the buttresses of the arches which rest upon them, were not the iron rods B. B, used as ties to connect the beams together laterally, and to prevent their being forced asunder and broken. These rods are all visible below the sweep of each arch of the wavy ceiling. The stability of the whole fabric of the mill itself depends not only upon the strength of these ties which secure the beams from being thrust asunder horizontally, and the arches from falling in, but also upon the strength of each beam in sustaining the perpendicular stress caused by the weight of the arches as well as of the superincumbent machinery. There are here no sagging, and gradual cracking and splintering, as when wooden beams are overloaded, to



give timely notice of imminent danger ; but when the metallic beam fails, the mischief which ensues is as instantaneous as it is unexpected.

A few years ago, one of the metallic beams of a fire-proof mill broke, whereby two ranges of arches resting upon it were let down. The floor with all the machines which stood upon it, and the persons who were attending the machines, fell upon the heads of the workmen on the next floor below ; the beams and arches of which, unable to sustain the shock of the falling materials, gave way also in turn. Thus the work of destruction was commenced, and the accumulated mass of materials sunk with irresistible force upon the several succeeding floors beneath, involving one wing of the mill in a mass of ruins, crushing and burying beneath the rubbish, men, women and children, in one promiscuous heap. Great attention has since been bestowed in proving the strength of the pieces of iron employed in the construction of mills and other buildings of this description, every metallic beam being subjected to a weight of ten or twelve tons, imposed upon the middle of it, whilst its two extreme ends only are supported. No wood appears in sight in any part of these structures, except that which composes the doors, the very window sashes being made of cast iron, and the stairs formed of hewn stone.

Notwithstanding all these precautionary contrivances, one of these supposed fire-proof buildings was actually destroyed by fire whilst I was in Manchester, thus demonstrating how unexpectedly the best devised plans of human art and wisdom may be baffled. To burn the incombustible materials of course was impossible ; but the heat produced the effect of softening the cast iron pillars or posts, arranged in the centre of the building to sustain the weight of the beams and floors, and of causing them to bow under their load, as Sampson in the vault of the

house filled with his enemies the Philistines, bowed the pillars which supported the arches of the floors above him, and involved the whole fabric in ruins. The heat in this instance was produced by a large quantity of dry wood prepared for constructing machinery, which accidentally took fire in the basement. The cast iron beams extend from the side walls to the centre of the building, where they meet, and are supported at their junction by the iron pillars on which they rest. The whole structure, massy and imperishable as it may appear, is upheld on a balance like a child's card-house; for when the central pillars yielded to the effects of the heat, the beams imposed upon them, and the heavy arches imposed upon the beams, all came down together with a general crash. In a moment, amid a cloud of dust mingled with smoke, an entire wing of this fire-proof mill seemed thus instantly to disappear.

Building materials of iron, brick, and stone are substituted very generally in England for those of wood, wherever it is practicable, not only because they furnish a security against fire, but because their superior durability makes their use a matter of economy. One of the towns of New-England, with its crowded array of combustible wooden houses, would be deemed an object of curiosity in England. The price of timber and boards is very high throughout this Island. Common pine boards are sold at the yards of the sawyers, at about five cents per foot, of the superficial measure of one inch in thickness; and oak timber is much dearer.

Most of the wood used for construction in England is imported from Norway and Canada, in the form of heavy square logs and joists, which are distributed over the interior of the country by the canals. The vigilance of English statesmen has even been extended to insure to the English laborers the petty advantage of sawing deal boards, to prevent foreigners from enjoying the profits of this branch

of business, the importation of thin sawed deals or boards being virtually prohibited by excessive duties. The logs and joists are deemed a sort of raw material, which is imported to undergo the process of being manufactured into boards at the timber-yards by the disadvantageous process of hand-sawing. A numerous class of men called sawyers, here mount the logs over sawpits, and cut them into the dimension-stuff that may be ordered by the consumers. A common saw-mill, which is considered indispensable to the convenience of the inhabitants of every country village of the United States, remains yet to be generally introduced throughout England as a species of labor-saving machinery. These sawyers, after serving an apprenticeship to the art and mystery of handling a saw, are ignorant, like most other English mechanics, of every other business and calling than that to which they have been trained from early youth; and are driven to desperation, when superseded in their labors by the introduction of new machinery. One steam saw-mill, which I visited in Manchester, has been thrice burnt down, as it was stated to me, by incendiaries; but the proprietors continued to persevere in their enterprise with great success, as may well be supposed, in competition with the sawyers who operate by hand labor. On inquiring of one of these sawyers the reason for not always sawing the timber by steam power, he observed, that there was a fear of wasting the stuff by the coarse saws used in steam mills. He might probably have added with a nearer approach to truth, for fear of the sawyers themselves.

The dread of incendiary attempts of mechanics to destroy newly introduced labor-saving machinery as well as of riotous mobs, and the frequent threats of personal violence,\* all conspire to prevent proprietors of mills from

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\*The son of one of the principal cotton manufacturers was shot in Manchester in 1831, in the evening, on his way to his residence, during a period of disturbance among the workmen,

adopting the use of such machinery. Even farmers in the agricultural counties have been compelled to relinquish the advantages of using threshing machines for fear of having their barns burnt. This great obstacle has retarded the march of improvement in England, and has often been the cause of ruin even to the very inventors of useful machines. Whenever an important labor-saving machine is introduced, a town or whole district is put in commotion, and the result commonly is decided by the presence of glittering sabres. Individual suffering and wretchedness are there carried home to the fire-side of the poor laborer, who becomes destitute of all the worldly comforts which can render life desirable, and even of the very bread to nourish those dependant on him. Excited by feverish desperation, he is almost ready to rush back upon the sabres which enforce the laws, to throw away a life that seems not worth preserving. He knows that when his occupation is gone, to which he has served his apprenticeship, he will find every other branch of business around him fully occupied; and that without the opportunity of obtaining skill afforded by long practice, he can hardly compete in a new business with well trained rivals. Indeed it is already a subject of regret with the humane portion of the English nation, that new inventions are daily lessening the demand for the labor of a crowded, and yet an increasing people.

For a very contrary reason, every new invention to supersede manual labor is hailed with pleasure in the United States, as cheapening the cost of living to the agriculturists, who compose the great and leading interest of every country. Broad and fertile lands, at a low price are attainable by almost every unemployed man in the United States; and always afford a ready resort, whatever may be the fluctuations in commerce or manufactures, agriculture having been the first employment of the early Pil-



grim Emigrants, and still remaining the never failing resource of their descendants when unfortunate.

The mechanics of the Eastern States, from their education and habits, (sprightly and enterprising) frequently turn their hands to two or three different trades before they become finally settled in one, quitting each with alacrity as soon as it becomes profitless or unpleasant; and leaving the service of their employers with equal indifference. Without general information on the subject of any other branch of business, the English laborer, when deprived of his accustomed profession by any of the vicissitudes which must at times attend the affairs of a manufacturing as well as of a commercial people, is left helpless and destitute, often without either the disposition or the ability to turn his hands to other avocations. In New-England, if a man does not succeed in one branch of business, he may be found readily essaying another; even in some instances officiating in the profession of law or of medicine, after commencing his career with the labors of the plane or of the anvil. It is undoubtedly true that, in most instances, this versatility is attended with a profitless result, as in the present state of the arts and sciences, a long period of arduous labor is required to attain skill and experience in any branch of business. For this reason, although the American artist, whilst thus shifting from one business to another, may display more of a spirit of independence and enterprise, yet he must thus often fail of attaining that practical skill in the use of machinery acquired by the long-trained artist in the workshops of England.

By an excellent provision of the common law of England, an equitable and proper remuneration is afforded to every citizen whose property may have been destroyed by the open violence of machine breakers, or by the outrages of riotous mobs of any kind. The English Code seems to



consider that there is a reciprocal obligation existing between the State and the individual who lives under the protection of its laws. Whilst, on the one hand, the individual is called upon to sustain the existing government with his property, and even by the exposure of his life, it is deemed, on the other hand, to be the duty of the government to afford perfect protection and security to the life of the individual, however humble, and full indemnity for his property that may be destroyed by mobs, when the laws have failed to afford him a timely protection. Even when windows\* are dashed in, or other property destroyed by the riotous throngs of a public city, the hundred or county, in which the outrages may have taken place, may be sued by the injured individuals, in the same manner as towns are made responsible in the United States for damages resulting from the breaking down of unsafe bridges. The amount of the loss or damages is inquired into and assessed by a jury, and a tax is levied to pay it. This law is peculiarly just in a republican country, where every individual must rely for the preservation of his life, as well as of his property, on the protection of the civil authorities. The instances are exceedingly rare in which injury has been done to private property in the United States by mobs, excepting, perhaps, in the demolition of houses of ill fame. No instance has occurred within my knowledge of a suit in the American courts to enforce this principle of the English common law, as a means of obtaining remuneration for destruction of private property.

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\*A tax of about \$50,000 was assessed on the inhabitants of the parish of Manchester a few years ago, to pay for power looms and other machinery broken by riotous workmen; and so late as 1831, the sum of about \$45,000 was assessed upon the inhabitants of Edinburgh to remunerate the numerous individuals whose windows were broken by a mob for not having been illuminated on account of the passage of the Reform Bill in the House of Commons.

In such of the United States as have adopted the English common law by express statutory provision, this equitable plan of dispensing justice might, perhaps, be enforced, should the sufferers come forward to claim legal remuneration.

After the cotton cloths are taken from the looms, they are subjected to various finishing processes, according to the purposes for which they are destined to be used. One of these operations is the singeing of the stuffs, to impart to them the appearance of linen, by divesting them of the loose downy fibres which give to cotton fabrics a peculiar roughness. This was formerly effected by passing the cloths over red hot iron cylinders. The singeing process has been lately improved by substituting in place of the red hot iron, a blaze of gas, which is made to issue from a tube perforated with a long row of nearly contiguous small holes, like those of the burners of a gas lamp. By kindling the gas issuing from one of the apertures, the blaze instantly flashes along the whole extent of the tube, forming a continued sheet of dazzling flame, shooting upward. Directly above this is fixed another tube of equal length, and perforated with a long slit exactly adapted to receive into its hollow cavity the jet of flame. The upper tube is connected with large air-pumps worked by steam power, whereby a rush of air is created into the aperture of the slit. When the cloth is passed between the two tubes, the blaze of gas ascending from the lower one, is actually drawn or sucked through the texture between the threads, by means of the slit in the upper tube. The most delicate muslins may be thus passed through a vivid sheet of flame, and become during the fiery ordeal not only divested of the rough fibres on the face of the texture, as had been previously accomplished by passing it over the red-hot cylinder, but even the rough fibres between the threads are singed off by the penetra-

ting flame, and the exact appearance of the smooth linen thread is produced.

The air pumps to create the draught, are made in the form of tumblers inverted over a basin of water. Each hollow cylinder is about three feet in diameter, made of sheet iron, with a tightly covered top furnished with a valve opening upwards. They are made to rise and descend in cisterns of water, and operate the reverse of a bellows, as they draw in the blaze and smoke through the pipe, and discharge the smoke through the valve. When the inverted cylinder is thrust down into the tub of water, the air within its cavity lifts the valve and escapes freely ; but when the cylinder is raised, the valve closes ; and whilst the cylinder continues to rise, the current of air enters it from the tube of the singeing apparatus. A peculiar advantage attending this contrivance is, that the smoke, which is so annoying in the old way of singeing on red-hot iron, is here all drawn into the pipe and air pumps as soon as formed ; and is discharged in another building, leaving the air of the apartment, in which the operation is performed, perfectly free of the suffocating vapors proceeding from the burnt fibres of cotton.

The machinery was operated by a small low pressure steam engine of four horse power, the cost of which, it was stated to me, was about seven hundred and fifty dollars.

Another process, which employs a great number of workmen, is bleaching by the improved chemical process, instead of the "grass bleaching," once practiced, when whole meadows were whitened with cloths and yarn spread over them. There the cotton fabrics were exposed to the sun and rains, and alternately moistened with water and dried. Weeks were consumed in tedious labor to accomplish what, by the improvements of modern science, is readily done in a few days. The object of both processes

is the same, that of dissolving or discharging the coloring matter natural to the raw material. This, it is supposed, is effected in the one case by oxygen obtained from the air; and in the other case by the chlorine obtained or extricated artificially in the chemical process.

The materials employed for producing the chlorine are sulphuric acid or oil of vitriol, common table salt, and manganese, a black heavy mineral substance abounding in oxygen. These are all mixed together in a retort or alembic in the proportion of about 14 parts of the acid to 10 parts of salt and 8 of manganese. On the application of heat the gas called chlorine arises, which is absorbed by lime water, and forms the blanching liquor, into which the cloths are immersed after having been boiled alternately in lime water and potash water. The cloths are finished by passing them through water acidulated with sulphuric acid, and then by a thorough washing in a revolving wheel called a dash wheel.

Instead of creating the gas as fast as it may be wanted, it is now usual to employ bleaching powders, which are made by causing the gas, produced in the mode already described, to be absorbed by dry slaked lime instead of the lime water; for which purpose it is thinly strewed on shelves in an air-tight closet, into which the chlorine gas is introduced. In the course of two or three days the lime absorbs about one third of its weight of the gas, and is thereby converted into the chloride of lime. The bleaching gas thus fixed in the lime becomes a portable article of commerce, and more convenient for the immediate use of the workmen. The sulphuric acid having a stronger affinity for the lime than the chloric acid, combines with the lime and sets at liberty the chlorine gas. So powerful is this gas that the colors of flowers and of the leaves of vegetables, and even of dyed cottons or calico, are immediately discharged on being immersed in a jar filled with chlorine.

Among the most important manufacturing operations carried on in Manchester are those connected with the printing of cotton cloths or calico. The mere designing or inventing of new patterns of figures for the printers is of itself a considerable business, furnishing regular employment to many persons, who gain a good living by their ingenuity in this branch of business. A Frenchman, several years since, came under a contract to furnish a stipulated number of new patterns every week for the engravers. It was stated to me that he succeeded readily in producing every variety of figures, merely by rubbing his eyes and noting the thousand flitting images, which after this rude operation appear coursing over the closed eyelids.

The process of engraving the copper cylinders and blocks for printing is another considerable business. In one apartment I saw nearly thirty men at work. The small figures and sprigs are engraved, or rather sunk into the surface of the copper cylinders by steel dies, instead of being cut by the graver. The pattern of a flower, or other figure is thus perfectly impressed in the twinkling of an eye.

After the process of engraving is completed, the copper cylinder is placed in a strong frame, where it is made to revolve by steam power, with a portion of the under surface constantly immersed in the liquid dye contained in a trough. The dye stuff which adheres to the surface of the cylinder is scraped off by the smooth edge of a steel blade, applied firmly against it. This blade, designated by the singular appellation of the "*doctor*," cleans off the liquid dyestuff only from the smooth surface of the copper, and leaves all the furrowed lines of the engraving full of the coloring substance. The cloth is imprinted whilst passing beneath a roller pressed by heavy weights upon the engraved cylinder, and operating together like two calender rollers.



The spongy texture of the cloth sinks into all the engraved cavities and imbibes the coloring matter lodged in them ; whilst from the smooth surface of the copper, cleaned by the doctor, it receives no dye to stain it. The cotton cloth is seen to enter between the rollers as white and spotless as pure snow ; and as if by a magical transformation to issue from between them on the other side, covered with gay flowers, or with pictured landscapes, spread over the surface in all the fair proportions of hills and dales and winding rivers. Three or more distinct colors may be printed and duly blended together to produce an harmonious effect, at one operation, by arranging an equal number of the printing cylinders, each engraved and supplied with its own peculiar color, to bear or press against the surface of the large smooth central cylinder, around which the cloth to be printed is made to pass. Beautiful chintz of several bright dyes, thus perfected at one operation, pass off over machinery to be dried nearly as fast as one can walk.

Block printing, as the term implies, is performed with pieces of wood twelve or fifteen inches long, and six or eight inches wide, the dimensions being varied to suit the required patterns. After being cut or engraved, they are used on the principle of common type printing, being first applied to the dye stuff, rendered viscid or glutinous by gum or paste, and then accurately applied to the cloth to cause each impression to be nicely adjusted along the borders of the pattern without showing disjointed edges.—The cloth is smoothly extended on a table, and the block is impressed upon it by a gentle rap, which transfers to it the dye stuff or paste. The block is then again applied to the adhesive ink or dye, and then to the spongy cloth, which absorbs and retains it, and this process is repeated until the whole is finished. When several colors are to be printed on one piece, to produce a variety of blended

tints, it must be passed over as many times as there are distinct shades or colors to be printed. The style of work executed on some of the slight cotton fabrics is surprisingly beautiful, rendering them nearly as valuable as silks.

The prints are finally completed by being glazed or polished. This is accomplished by first impregnating the calico or chintz with gum, starch, or beeswax, as may be best adapted to the purposes for which it may be intended. Thus prepared, the cloth is passed between two cylinders, one of which is hollow, and is heated by red-hot pieces of iron inserted in the cavity, or by steam. To one of the rollers is given by the machinery a quicker rotation than to the other. The two calender cylinders are thus not only caused to roll in contact, but also a rubbing effect is produced, owing to the different relative velocities with which the surface of each is caused to move. By this means the hot surface of the polished cylinder is made to partially slide over the surface of the cloth, to be glazed, as the polished surface of a flat iron or sad iron is passed over clothes by the laundress in the familiar domestic operation of ironing.

It has been found that the smoothest and hardest substance, best adapted for one of each set of calender rollers, is the apparently soft spongy pasteboard. Many thousand folds of this sort of paper are used to form one roller at an expense of several hundred dollars. To consolidate the paper, a powerful hydrostatic press is employed, by which a pressure equal to that produced by a weight of nearly a thousand tons has been imposed on a single paper calender roller, whereby it has been rendered nearly as hard as the iron roller, its antagonist, and quite as susceptible of a fine polish.

It is a subject of particular study with the printers to procure tasteful designs or patterns; as by this means they are able in some instances to obtain twenty or thirty per cent

more for such goods as may suit the difficult tastes of the fair sex.

Every effort of human art and ingenuity is excited to the utmost in Manchester to gratify and indulge the varying wants and fashions of the ladies of all parts of the world—even of Egypt and India ; and the tastes of the sable beauties of the Gold Coast are consulted, as well as those of the fair ones of the United States and England. One might imagine, on beholding so many people all hurrying in unre-mitted labors and apparently actuated by one wish to please the ladies, that there existed here a spirit of devoted and universal gallantry. The mere privilege of the first supply of the most desirable fashionable patterns is sometimes purchased by the merchants at a premium of fifty or even of an hundred pounds sterling.

The prints are conveyed from one warehouse to another in covered carts, closed by doors and securely locked, by which means they are protected from the showers of rain which fall so frequently and unexpectedly in Manchester, and also from the prying curiosity of rival artists, who are always desirous to see and to copy new styles and patterns.

The print works, like almost every other nook and corner in England, are the abodes of excise officers, who collect the duty of three pence half penny (about seven cents) imposed upon every yard of printed cottons.\* To designate and identify the pieces on which the duty has been paid, a small strip of the printed cloth is torn off from the end of each piece and is preserved by the custom-house officers with the proper marks and numbers. In the progress of time whole warehouses have been filled with these useless fragments. When the prints are ex-

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\*The duty on cottons printed in England, was repealed in 1831, and an additional duty has been imposed on the raw material as a substitute for the tax on prints.

ported, these samples are produced and compared with the original pieces from which they were torn. If found to agree, a return of the duty is allowed to the exporter, to encourage foreign trade, as one of the printers observed to me. There have been instances in which the exporters of old and unfashionable calico have received, by this return of the excise duty, nearly the first cost.—The proprietor of one of these print works has paid in the course of six weeks, it is stated, a duty to government at the rate of about a quarter of a million of dollars per annum; and four of them, during the same period, have paid at the rate of about 750,000 dollars per year. Loaded with this heavy impost, prints are sold in the shops in England at higher prices than when retailed in the United States.

Great quantities of fustians and velvets are made in Manchester. The peculiarly soft pile or nap of the cotton is produced by weaving the cloth in the loom in such a manner as to form a continued succession of loops or raised threads. These loops are then cut by a knife with a long slender blade, having the point rounded to serve in directing the movement of the keen edge through the rows of loops, that project upwards from the surface of the cloth. The pliable ends only of these cut threads are felt when the hand is pressed against a piece of velvet, and they yield like a cushion, thus causing the proverbial softness of this kind of cloth. To equalize the ends of the cut threads or pile, the velvet cloths are passed over a red-hot iron, which singes off the longest portions, and smooths the surface to a general level.

The American machine, invented by Whitmore for setting the wire teeth of cards, has long been deemed one of the wonders of Manchester. The works belong to an intelligent American, Mr. Dyer. There are nearly an hundred machines in operation for setting the card teeth,



and about fifty more are about to be constructed. A dozen persons are able to keep them in constant operation, and to accomplish as much work in one day as could have been done on the former plan by two or three hundred persons. The work is more perfect than when performed by hand, and is generally preferred by the manufacturers who use the cards.

This machine for making wire cards seems, whilst one intently regards its movements, to be self-directed, like some of the automaton figures of Maelzel. In the course of its operation, it pricks the holes in the sheet of leather, cuts off the wire, which it draws from the coil, into small pieces of suitable length for the teeth; bends the staples to form the teeth, and inserts them into the small holes pricked in the leather by the awl, also moved by the machine; and finally gives the inserted tooth a proper bend or hooked form completing all these operations until it sets many thousand teeth into a sheet of leather, often without stopping or missing a single tooth. By means of this ingeniously arranged contrivance, the spectator may almost imagine the brass and iron to be endued with the attributes of human skill and intelligence.

The original proprietors were unfortunate in their first attempts to introduce this machine into successful operation in England, as is often the case in attempts to overcome prejudices, in order to substitute new machinery in the place of old. The perseverance of the proprietor cannot fail, however, eventually to insure a success, splendid even for England.

As another wonder of mechanism in Manchester, and as a rival of Whitmore's card-machine, may be mentioned a machine for making weavers' slaies or reeds by steam-power, invented also by an American, Mr. Wilkinson.—Unaided by the attendant, it draws off from a coil the flattened wire, cuts it into pieces of proper length, inserts



each piece, termed a dent, successively into the frame of the slaie, where it arranges them all side by side, with precisely equal spaces between them, like those between the teeth of a comb; and finally binds each dent to its place by a ligature of tarred twine. All of these complicated operations are performed by the machine with a celerity and perfection, which manual labor cannot excel.

To render one of the public clocks in a church tower visible during the darkest hours of midnight, as well as during the day, the dial-plate is formed of ground glass, and is illuminated by gas lights arranged behind it. The figures which designate the hours, as well as the hands, being of an opaque substance, obstruct the rays of light, and appear like dark shadows upon the illuminated face of the ground glass dial-plate, and are even more distinctly observable at night than at noon day.

In passing through the streets of the suburbs of the town, one is sometimes induced to linger a few moments to listen to the voices of ballad singers, who gain their living by the petty contributions of their transient auditors. There still prevails an evident attachment among the laboring classes to the recital of ballads—a relic, probably, of former times, when minstrels wandered over the country, and were entertained at the tables of feudal chieftains. Their once “high calling” has been humbled to exhibitions of minstrelsy in the public streets before the casual passengers, who may be induced to stop and listen. One can hardly refrain from sometimes smiling at the comical wit or grotesque appearance of these ballad singers; or from shuddering at the narration of horrid murders recited in more horrid verse.

In a machine shop in which about 150 workmen are employed, a large apartment was shown to us provided with tables at which many of the mechanics dine together. Each man brings his provisions; and women are hired to

cook them. By this plan, it was observed, punctuality is ensured, attended with an important economical advantage to the work people.

A tariff of pecuniary penalties for coming at late hours, and for the various petty offences against the necessary discipline of the establishment, is affixed to the walls of each work room, the fines for each offence being stipulated, in shillings and pence, when the contracts are made with the workmen. It is a common plan in all the best organised mills in Manchester, to enforce pecuniary mulcts. By this means both regularity of attendance is obtained, and a sort of discipline preserved, which induces orderly labor. From the number of mechanics employed here, and the labor-saving machinery brought to their aid, it was stated to us that a cotton power-loom had been completely made and turned off during each hour of the day.

Connected with this machine shop are two iron furnaces, the coke used in which is partly derived from the coal consumed beneath the boilers of the steam engines.—For this purpose, two distinct furnaces or sets of boilers are used, into which the coal is alternately thrown, and allowed to burn until the blazing and bituminous parts are consumed.

The furnace door is then tightly closed, and the fire extinguished, after which the prepared coke is withdrawn. The fires beneath each of the two boilers are alternately kindled up in order to produce no delay in the working of the engine.

Some of the machine shops of Manchester are constructed on a most extensive scale. The proprietor of one of these establishments informed me that he employed 380 workmen. The bars of iron are heaped up in his yards like piles of cord wood. A branch of a canal has been formed through the centre of his premises, over which

there is a bridge that is capable, as it was stated to me, of being raised, for canal boats to pass beneath it, upon the principle of the hydrostatic paradox. The pressure is conveyed through tubes filled with water, and laid beneath the surface of the ground, to act on the moveable pistons upon which the bridge rests; and when the forcing pump is put in motion, the bridge rises from the abutments as if lifted by magic.

In passing through the various market places in England, you frequently view women in the butchers' stalls, with their sleeves rolled up, performing all the operations of cutting up meat. To one unaccustomed to beholding females managing this work of blood, it is not an agreeable spectacle. In those who perform the duties of the butcher, we cannot expect to find much of that delicacy, which forms one of the most lovely attributes of the female sex. There seems to be a thoughtless levity among those females of the higher classes, not only here but throughout England, who make the periodical sessions of the court their gayest season for dancing and visiting. The following is copied from one of the Manchester papers. "It is expected that the ensuing Assizes will be very gay from the resort of genteel company;" adding, in the same paragraph, "there are in prison six persons to be tried for capital offences." It seems to the stranger a singular circumstance that these solemn periods, which are of such serious moment to the poor criminals, and decisive of their life or death for alledged violations of the laws, should be selected by the gay and fashionable as seasons for festivity and mirth.

The basin and warehouses of the Duke of Bridgewater's canal exhibit a bustling scene of active business. This was one of the first works of the kind constructed in England. Considering the novelty of these untried works, which, during the period of their construction, were deemed rather the schemes of a speculative, than of a pru-

dent individual, the duke of Bridgewater's canal was a most bold enterprise, and honorable to the country in which he lived. Even at the present day, when so many canals have been constructed in various parts of the kingdom, this canal, with its ware-houses, branches, basins, and tunnels, is still classed among the most magnificent works of the English nation. This truly illustrious individual, whose views and intelligence so far anticipated the future wants of the country which his enterprise has honored and enriched, fearless of the result, expended all his own funds, nearly a million and a half of dollars, which proved inadequate to completing his canal. He was then assisted in his undertaking by funds liberally furnished by the English Parliament. The net receipts from the canal are now nearly half a million of dollars annually.\* Thus unlike most enterprises of a bold and novel character, it has conferred both wealth and fame upon the projector, and the glory of being classed among those illustrious men, who have conferred honor as well as the most important benefits on the country of their birth.

In some parts of its course, the canal passes through subterraneous channels, or tunnels, as they are termed.—Wherever the rocks are solid, the roof of the passage, is left ragged as when first excavated; and where the soil is loose, the roof of the passage is kept up by arches of brick work. Sufficient light is admitted into these gloomy subterraneous tunnels by holes, resembling wells, cut vertically from the roof of the passage to the surface of the ground above. The thickness of the earth lying above some parts of the tunnel is more than one hundred feet, through

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\*Great as has been the amount of tolls collected on this line of canal, considering its actual first cost, it has fallen far short of the amount collected on the more extensive Eric Canal, in the State of New-York, which yielded, in 1831, above one million two hundred thousand dollars in tolls.



which the light of day streams down upon the dark waters in the cavernous passages. Tunnels are made even within the town of Manchester, and in one place goods are hoisted up from the canal out of a sort of circular well.

“Including the ten miles of underground navigation in the mines at Worsly, the Bridgewater canal is fifty-five miles long on the same level. This level is also connected with that of the first eighteen miles of the Grand Trunk Canal. Thus the inland navigation in the environs of Manchester presents a continued level of seventy miles, without either ascent or descent. Such an expensive level has only been effected by the most daring and expensive labors, by long and deep cuts, by immense embankments, and aqueducts. All these obstacles were overcome by the energy of the Duke of Bridgewater, and the genius of Brindley.” It appears from a statement of the number of canals constructed in England, that their whole length is about 3000 miles—a distance which if extended in a straight line would be equal to the width of the Atlantic. In this extent of canal navigation, there are about 40 miles of canal tunnels, or underground navigation.\*

On passing one of the squares, I was reminded of the Manchester massacre—this harsh epithet being usually applied to the attack of a body of cavalry upon an assembly of citizens once convened in this square for the purpose of adopting measures to promote a radical reform of the government; whence this class of reformers have been called by their political opponents, “radicals.” These meetings and overt acts of the common people not having

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\*In the States of New-York and Pennsylvania, there will be finished in the course of the year 1832, above 1000 miles of navigable canals.—The first canal in either of those States was commenced in 1817, and in the comparatively short period of fifteen years, there will then be completed in those two States only, an extent of canals equal to one third of all the works of this kind, which have been executed in England.



been sanctioned by either of the constitutional branches of the English government, were viewed by those who possessed the power of checking them, as the proceedings of riotous mobs; and the sabres of troops were accordingly put in requisition to suppress them. A similar result must probably attend all attempts of a revolutionary nature, termed Radical Reform, in contradistinction to Parliamentary or Constitutional reform. In every town throughout England, where the inhabitants are suspected of entertaining principles which might lead to insubordination, and particularly in the neighborhood of large manufacturing districts, troops of cavalry are stationed, and always kept in readiness for immediate movement and action. A considerable standing army is thus distributed over various parts of England. Aided by the rapid modes of conveyance available, a powerful body of troops could be assembled in a couple of days to act simultaneously at one point, and an undisciplined multitude might be exterminated by the regular troops, thus brought to act against them, before revolutionary plans could be sufficiently matured to become formidable. Standing armies have long been deemed destructive to republican principles, and favorable to those of a monarchical or aristocratical character; for there is but little fellow-feeling between those men who entertain liberal notions of freedom, and the soldiers, who are taught to consider unhesitating subordination to the orders of their officers a virtue, and become habituated by severe discipline to move their very limbs in conformity to the commands of a superior, until their thoughts as well as actions are trained into unconscious submission. At all events, when a body of regular soldiers are once drawn out under the orders of energetic officers, the first salvo of brickbats or stones, discharged by the undisciplined multitude, commonly destroys any friendly feelings they may possess; and a sense of immediate personal dan-

ger, after being thus assailed, speedily converts them into deadly foes to those who oppose them. Without stopping to refine on the political rights of the people, the common soldier then becomes ready in an instant to use the weapons in his hands.

To prevent, as much as possible, the growth of too great a congeniality of sentiments between the people and the soldiery, and to counteract the effects of national sympathies, it appears to be the studied purpose of the government to station English and Scotch soldiers in Ireland, while those who are natives of Scotland and Ireland are stationed in England.

The officers of the army are nearly all connected with noble or wealthy families, to whose patronage and wealth they are mainly indebted for their commissions and advancement, and with whom they almost exclusively associate. In vague attempts at political reform, the contest lies between the laboring and middling classes of society on the one hand, who consider themselves debarred of their political franchises, or stripped of their acquisitions of property by various onerous taxes; and those, on the other hand, who are either supported in affluence by the revenues they derive from lucrative offices of Church and State, or being already possessed of wealth and titles, can gain nothing by the change, and, good easy men, remain satisfied with things as they are. By many of the latter, the laboring classes seem actually to be regarded as the subordinate working-bees, destined by the wise decrees of Providence to sustain by their industry the drones of the great political hive. The productive classes,—the working-bees of England, do indeed toil to make honey, as Virgil observes, for others to enjoy; but so far are they from deeming the partial distribution of profitable offices to be designed by the immutable decrees of Heaven, that it requires not a

long residence in England to discover the ardent wishes of many to obtain the power and opportunity of applying the experiment of human means to reform the abuses by which they deem themselves to be sufferers.

The English people have to combat so many old customs and long established institutions, that the progress of their work of reform must be tardy. What was accomplished in this way at one step, above two hundred years ago, by the emigrants to the Western world, who left the "lords spiritual and temporal" behind them, is to be gained slowly by the descendants of those who remained in the Old Country. Without pretending to pronounce a republican form of government best adapted to the existing condition of England, it may be safely asserted that a most enlightened portion of the people of that country are desirous of enjoying the free institutions, which the inhabitants of the United States have obtained so much in advance of them. To make an experiment of a full and free enjoyment of religious and political rights, by means of a constitutional reform, unaccompanied by the intervention of clashing sabres and bloodshed, such as occurred in the square of Manchester, is the fervent desire of millions of Englishmen.

Whatever may be permanently effected in this way, will probably be accomplished in the mode adopted by the American colonies,—by combined associations of individuals in the first instance, and by properly organized national associations afterwards; to convince rulers that concessions are expedient and indispensable. The great difficulty is to be encountered at the first step, in obtaining the acknowledgment of the truth of the maxim or principle, that the people are the source of power, and that governments are instituted and rulers appointed for their benefit; and to show convincingly to those who may possess the power

that it may be unsafe, as well as unjust, to act in opposition to the will of the people.\*

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\*It often affords a curious contrast to compare the opinions expressed in relation to the same subjects by travellers of different nations, trained as they usually are by different habits and modes of thinking. Every traveller must feel that many of the opinions which he advances are somewhat crudely and hastily formed; and that he is also often biassed by early education, and the peculiar customs of the society in which he may have passed his days. Observing institutions of a novel character, and widely different from those to which he may have been habituated from his youth, he is led almost instinctively to utter sweeping expressions of condemnation against them, often adopting as a standard or touchstone the institutions of his own country. Sensible of a strong attachment to the free institutions of his native land, the writer solicits indulgence for what some perhaps may deem too frequent or earnest expressions of that attachment.

That there are many imperfections in the present republican form of government of the United States cannot be denied; for all human institutions are in themselves more or less imperfect. It is one of the excellencies of free governments that these imperfections, whenever detected, are readily amended without shock or revulsion. Their very safety, indeed, consists in a pliability to public opinion, as the reed securely abides the storm which shatters the oak that unyieldingly resists it.

The following extracts, derived from the work of Captain Basil Hall of the British Navy, illustrate the opinions of a foreigner in relation to the religious and political institutions of the United States.

“But the Church, most unfortunately, I think, for that country (the United States) is unconnected with, and unsupported by the State.”

He is not willing even “to imagine that the science of government lies within the capacity of the laborers of the soil,”—and to prove this doctrine, by way of illustrating the superior excellence of aristocratical governments, where men are educated to rule the people in order to save them the trouble of thinking about the intricate subject of the science of government for themselves, he says,—“I am tempted to conclude this branch of the subject with a well known quotation from the thirty-eighth chapter of the Book of Ecclesiasticus, in the Apocrypha, in illustration of this wholesome truth, which people sometimes forget, that in the body politic it is wise to keep the head up and the heels down, instead of inverting the process, according to the present fashion in America. I certainly saw nothing there to disprove the truth of these old maxims.”

“How can he get wisdom that holdeth the plough, and that glorieth in the goad? that driveth oxen, and is occupied in their labors, and whose talk is of bullocks?”



The agents for the manufacturers of blacking are notorious for their zeal and perseverance. They make circuits all over England, the brick walls on the road side in the country, as well as on the streets of the towns, being whitewashed with gigantic letters, which those who run may read; and which the proprietors of the walls often read to their dismay and vexation, on discovering the surface of the ranges of their neat brick walls converted by

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“He giveth his mind to make furrows; and is diligent to give the kine fodder.”

“The smith also sitting by the anvil, and considering the iron work, the vapour of the fire wasteth his flesh, and he fighteth with the heat of the furnace, &c.”

“These shall not be sought for in public counsel, nor sit high in the congregation, &c.”

“But they will maintain the state of the world and all their desire is in the work of their craft.”

“By allowing the chief station in the country to be filled by the hereditary nomination of Nature, to use a quaint expression, all the rest of the community are left to attend to their own substantial affairs, instead of being distracted, as so very large a proportion of the American population are, about matters of moonshine.”

In regard to the establishment of a national Church, meaning thereby a body of independent clergymen supported systematically by taxation, for fear the holy cause might become endangered when resting for support only on the free-will offerings of pious hearts, the Captain had probably forgotten that it was expressly to escape from the domination of the Lords Spiritual in matters of religion, that many of the first settlers or emigrants left, 200 years ago, the fair land of their fathers, rendered dear to them by the strongest ties of natural affection, and resolutely determined to seek another country; deeming even a residence in a wilderness, and among savage men, preferable, provided they could there enjoy the privilege of worshipping their creator in their own way. Solely actuated by these principles, they cheerfully encountered all the dangers and privations incident to a bold attempt to establish a new society, where, as some of the early emigrants professed, “they might make a lively experiment of a complete freedom of opinion in all religious concerns.”

As it respects “the laborers of the soil,” they form in the United States probably the most independent class of men in the world; as they neither rely upon the venal influence of Royal favorites nor even upon those of men “robed in a little brief authority” among themselves; but look up



invisible hands during a moonlight night into vast signs for advertising Day & Martin's or Warren's blacking.

During one of my walks around this town, I stopped to examine the operations of a number of workmen employed in making the mule spindles used in the cotton factories. After the steel spindles are forged they are ground to a suitable size upon stones, which revolve with great rapidity. So great is the intensity of the friction between the

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only to Him for their patron "who gives the early and the latter rain in due season." Washington was born on a farm or plantation, which he rendered a model of agricultural improvements; and he suddenly brought his valuable life to a close by exposure in agricultural pursuits. Greene, who so successfully led the American armies in opposition to British veterans, was once actually a "smith sitting by the anvil and considering the form of the iron work." Franklin, and many others were not, according to these strange doctrines of qualification, "worthy to be sought for in counsel, nor to sit high in the congregation." So far as human experience has thrown light on the science of government, the more plainly it has been adapted to every comprehension, the better has it succeeded in practice. After all the boasted foresight and deeply laid schemes of the most celebrated English statesmen, planned with elaborate contrivances in the management of the foreign policy of the powerful nation under their control, what has been the result but debts and taxes; which oppress a magnanimous people, cheated by false representations to spend their best blood and treasure in foreign wars to preserve the 'balance of power in Europe.' There is now hardly a farmer or mechanic in the nation so stupid as not to feel that it has all proved a delusive bubble—and that the English people have been exhausting their resources, not "in fighting the battles of Europe" for promoting the cause of liberty as they had supposed, but for sustaining legitimate monarchs on their thrones. Against republican France was excited by artful politicians as bitter national animosities as ever prevailed between the inhabitants of rival nations. From the offensive hostility of surrounding neighbors, the defensive wars were so vigorously carried on by France, whilst sustained by the unparalleled support from the people, who deemed themselves freemen contending against royalists, that the scale was soon turned in favor of the Republic.—After the ceremony of passing around the ballot box to elect a new Emperor, millions of hands were still exerted to sustain the man for whose election they had previously been exercised in inscribing votes. From the mere circumstance of having been thus in form chosen by millions of voices, the elected Emperor received to the last more ardent support from his con-

steel spindles and the surface of the grinding stone, that a constant stream of sparks flies off from it, as from a rocket, until the steel becomes red-hot, which even takes place notwithstanding a small stream of water is suffered to trickle upon it. By a very simple contrivance the spindle is made to turn on its own axis at the time it is applied to the stone, whereby the surface is ground off equally on all sides, and is rendered perfectly round.

After leaving Manchester on the road to Leeds, the traveller frequently passes little villages, each collected around the lofty smoking chimney of a cotton mill. In the fields adjacent to the road are the shafts of the coal mines, the mouths of which are designated by heaps of black earth and stones,—the refuse materials raised from the shafts. Some of the pits, appear to be worked on a small scale for sup-

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stituents than any legitimate or hereditary monarch can ever hope to obtain from his patrimonial subjects or vassals. After peace was re-established, and time was allowed for consideration, when the heat of the conflicts was over, the English people discovered that they had been instrumental in dethroning the only duly elected monarch in Europe.

After the restoration of the legitimate monarch to the throne, the gallant French people have again thrust forth the “true prince” and selected a ruler in his place, thus practically establishing, in fact, by the repeated exercise of the elective power, the form of government for France termed an elective monarchy. The popular influence existing in that country has been, very lately, still further illustrated by the abolishment of the Hereditary Peerage. The French people have thus been practising what the English people have been proclaiming; and have set the example of a rapid advance in obtaining free institutions, which their neighbors on the opposite side of the channel are now sighing in vain to imitate.

In the management of their internal affairs for the promotion of the prosperity of the nation by the encouragement of agriculture, trade and manufactures, the sagacity of the well trained British statesmen has been truly conspicuous. They have more than counterbalanced the errors of foreign policy, by diffusing general prosperity over the land—a truce, however, to political disquisitions. To the reader who may have followed him thus far into the labyrinth, the writer plights his troth, that if he will find his way back to the broad road, he shall not hereafter be again tempted aside from it.

plying the neighboring farmers with fuel. The coal is raised by horses, who traverse a circular path beneath an open shed, like that which covers the machinery of a New-England cider mill. Most of the mines are, however, wrought by means of steam engines, the machinery of which is also protected from the weather by slight sheds. Some of these mines are about 600 feet deep.

On approaching the borders of Yorkshire, the traveller crosses a few ranges of hills, and leaving behind the region of cotton mills, enters the district of country where the manufacture of wool exclusively occupies the attention of the population. Scarcely a solitary cotton mill is to be found in Leeds, or a woollen mill in Manchester. By this peculiar concentration of each branch of manufacture in a separate district, very important advantages are obtained; all the necessary machine shops and other kindred operations and subordinate manufactures, which are dependant on each other, and which spring up and flourish together, being thus collected within the range of a convenient neighborhood: Superior economy in obtaining both the necessary machinery and workmen, and excellence in the fabrics produced by them, are thus obtained.

On the borders of Yorkshire, the face of the country is broken into hills resembling mountainous ridges. The ascent of some of them is so abrupt that the passengers alight from the coach to relieve the horses of a portion of their burthen. After winning by a toilsome progress the summit of the highest of these ridges, we were enabled to look down upon the intermediate lowly valleys of Saddleworth, through which a little stream glides, turning in its course the wheels of several small stone woollen mills.—After the introduction of machinery for the manufacture of wool, and before the improvements had been made in the steam engine, recourse was had to these streamlets for

the moving power to put in motion the original rude mechanism.

There is a considerable export trade from Saddleworth to New-York, in the articles of cassimere shawls. This business is apparently on the decline, the buildings containing the machinery, as well as the dwelling-houses adjacent, being old and dilapidated.\*

Beneath one of the mountainous ridges, the Huddersfield and Manchester canal penetrates by a dark channel or tunnel of more than three miles extent under ground, from the place where it appears to dive into the earth, to the spot at which it emerges to the light. At one point on the summit of the hill, it was stated to me that we were six hundred feet above the hidden waters of the canal. This tunnel was a vast work, seventeen years having been consumed in completing the excavation. The Huddersfield and Manchester canal is only 19 miles long, and has proved one of the most expensive and unproductive enterprises of the kind undertaken in England. For its width, Mr. Sutcliffe states, it is the most expensive canal in the world, having cost, including interest allowed on the principal whilst the work was in progress, about £25,000, or about \$120,000 per mile. Boats are permitted to enter

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\*During a stroll among the hills of Saddleworth, I delivered a letter from a workman of a manufactory in the United States to his father. The old man and his family were evidently much rejoiced on receiving intelligence of the welfare of their relative, and in the fulness of their hearts, to manifest their hospitality in honor of their guest, they sent a capacious flagon to the neighboring grocery. It was returned again in a few moments frothing with red bubbles of genuine English brewed port wine. I felt an involuntary shudder spreading over the region of the stomach, as if a signal of the approach of the acid decoction had been passed to it through the telegraphic medium of the eye. In despite of the revolting struggles against the task of politeness imposed upon it, the contest was soon terminated by effecting a lodgement, in the enemy's quarters, of a draught of the purple liquid to the health of absent friends, who will probably never be sufficiently grateful for the penance thus endured in their behalf.



the gloomy passage in one direction for 12 hours, and in the opposite direction for the next twelve hours, the tunnel being too narrow for canal boats to pass each other. In regard to the navigation of this subterranean passage, a writer has observed that the slavery of working vessels through the tunnel is much greater than working upon the hulks, as the men have generally to lie on their backs, and paw with their feet against the top or sides of the tunnel for three hours and upwards, until they have thus pushed the vessel through.

There is a remarkable bed of peat, or moss, as it is here called, which lies upon the tops of some of these barren hills, covering their bald summits to the depth, in many places, of six feet or more. In New-England, such collections of peat are commonly found in the sunken levels of lowland swamps. The unexpected sight of this remarkable covering upon hill tops excites the surprise of an American, as being out of place. The appearance of the mosses may be readily imagined by those who will in fancy spread over a range of rugged hills the smooth external turf of the peaty morass of an American swamp. No trees or shrubs strike root into this cold spongy soil, but bald and barren, the mosses have a desolate aspect. Being thus spread over the surface of the hills, they absorb the rains like a sponge, and gradually yield the waters in trickling currents, which descend the sides of the hills in rills, spreading fertility and perennial verdure over the vallies beneath them.

Among the other miscalculations in constructing the canal to which allusion has been made, a deficiency in the supply of water from these mosses, and from the springs which it was supposed would gush in ample quantities from the top and sides of the tunnel, has rendered it necessary to construct several small dams across the ravines to catch the waste water of occasional showers for



the supply of the lockage and evaporation in the seasons of drought.

On descending the eastern declivity of this range of hills, the road follows a stream which originates in the mosses of the hill tops, and holds its straightened course through a deep narrow valley. This rivulet aids in turning the water-wheels of several woollen mills, in conjunction with steam engines as fellow-laborers. The steam engines are resorted to, when the rivulet fails of supplying the requisite quantity of water for operating the machinery. So lofty and imminent are the hills in some spots, that in mid-winter the mills can receive the benefit of the cheering rays of the sun, only when it attains its meridian elevation. During a foggy state of the atmosphere, some of the mills are deprived of even this scanty portion of light at mid day, by the smoke which hovers in the stagnant air over the glen. To obviate this inconvenience, and to quicken the draught of air through the fires, several of the chimneys of the steam engine furnaces are constructed at a distance above the works, on the bare abrupt hill sides, where they stand like solitary towers spouting up the smoke as if venting subterraneous fires from their tops, elevated into the regularly moving currents of air above the baffling eddies of the vale. The chimneys are connected by means of subterraneous flues, formed beneath the arid turf, with the furnaces of the mills below them.

#### HUDDERSFIELD.

The mistress of the Swan inn, at which the coach stops, appears to discharge all her duties with matronly care, and to have some regard for the spiritual as well as the temporal welfare of her guests. In one of the neatest rooms, although not one of the most splendid, in which I have

lodged in England, I found a Bible upon a table, and noticed that other rooms were furnished in the same manner for the use of the inmates. Huddersfield, in 1821, contained a population of 13,284 inhabitants. The whole of the land on which the town is built belongs to a single proprietor, with the exception of one solitary lot and dwelling-house, owned by a member of the Society of Friends; who, it was stated to me, sometimes jocosely observes, that the whole town belongs to him and his fellow-proprietor.

It is thus that immense estates become accumulated in England, where they are secured by entailments, which are sure in their results, as the steady march of time, being established and favored by the laws of the land. By means of these artificial legal ligatures, the free circulation of property among the various members of the community becomes impeded, and, like vast wens, wealth accumulates, until some individuals scarcely know how to expend their incomes in a reasonable way. The law of entailments, and even that of primogeniture, was once introduced into the North-American colonies as a portion of the common law of the mother country. But thanks to those who dreaded a permanent aristocracy of wealth as much as they did that of royal blood, the system is broken down in the United States, by laws which allow such entailments to be barred. A vast landed estate here becomes enlarged by adding acre to acre, and nailing it indefeasibly to a line of descendants.

Whilst such estates diminish the number of freeholders, they tend in the same degree to diminish one of the strongest ties which attach man to his natal soil—that of feeling himself to be proprietor of the glebe he tills. The great estates of the wealthy landholders of England thus resemble the pent up waters of a stagnant lake. The pestiferous influence of its morbid accumulations immediately

ceases, however, when it becomes diffused in quickened currents through the various channels of society. Its healthy circulation spreads that general comfort and happiness among all ranks, which it may well be the study of the law-giver to promote and perpetuate. Even the very peasant, in imitation of his wealthy lord, bestows his solitary acre of ground to exalt the fortune of his eldest son, whilst the younger children are neglected, as if unworthy of a parent's love.

Huddersfield is celebrated for its manufactures of woollens, for the reception and sale of which a large circular building is erected, called the Cloth Hall. The manufacturers of woollens bring their cloths here, and the purchasers meet them on stated market days, twice in each week.

No town in the world probably presents to view a more substantial appearance than Huddersfield. The houses are constructed of blocks of stone, split with great regularity, resembling hewn stone laid in courses. This valuable building material imparts to the very cottage of the laborers great solidity, with some share of beauty. The roofs of the houses are covered with large flat slabs of stones, resembling those used for flagging the sidewalks of the streets of a city, split into thin flakes, and fastened by wooden pegs to the roof boards. Not a particle of wood is perceptible on the exterior except in the doors and window sashes. The houses look as if they might endure as long as the stone quarries from which they are constructed.

In Huddersfield are several fine woollen mills; but much of the old fashioned machinery is pertinaciously employed. There seems generally to be a great disinclination amongst English manufacturers to reject old machinery from their mills. This probably is found to be a wise course, when prudently followed, as in no way are the

losses heavier to a mill owner, than in discarding valuable old machines for those which happen to come into fashion; for fashion actually prevails among manufacturers in regard to machinery, as it does among the ladies in selecting their bonnets. From repeated losses in adopting too precipitately newly invented machines, it is probable that many of the older English manufacturers now lean to the opposite extreme, and delay, in some instances longer than it is for their interest to do, the use of labor-saving inventions. This readiness to adopt new contrivances or machines, and to reject old and long-tried ones, is characteristic of the manufacturers of New-England, where at many mills may often be seen, collected together in some bye place, various kinds of machinery, abandoned after a course of unsuccessful experiments, and packed together as rubbish; thus forming a sort of museum of injudicious and abortive contrivances, which might well be preserved, like the blue chamber in Blue Beard, as a terror to their successors, to prevent their curiosity from getting the better of their discretion.

Here I found the great and ponderous shear-blades in common use, where the light circular revolving shear-blade would have performed the same work in a more perfect manner, at half the expense for attendance. I also witnessed in an old building several men employed in raising the nap on broadcloth by teasles, applied by manual labor, instead of being attached in the now common way to the surface of the revolving barrel of a cylinder or drum, called a gig-mill, whereby two men are enabled to perform more work than a dozen in the old manner. The hard struggle of hand labor against improved machinery was here indicated by the broken window panes, into some of which were thrust old hats—those ready substitutes for the crystal in the house of poverty. Thus it is that each one here clings to the trade or profession to which he has been



educated, until absolute starvation compels him to abandon it. The road from Huddersfield to Leeds crosses a hilly country, improved for the pasturage of cattle. From the top of one of these hills, far distant from Leeds, the usual appearance of the dark cloud of smoke, which hovers over every manufacturing town in England, gave us notice that we were approaching a second Manchester.

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### LEEDS.

LEEDS holds about the same rank for its extensive manufactures of Wool, as Manchester holds for those of Cotton. This town has also been rapidly increased by the prosperity diffused by this branch of business. About a century ago, Leeds was an inconsiderable village. In 1821, it contained 84,000 inhabitants. The various manufactures of woollen cloths, like those of cotton, were carried on, previously to the year 1760, in private families, by means of the single hand-cards and spinning-wheel. Each head of a family was an independent manufacturer on a small scale. He purchased a few pounds of wool, and carried it to the dyer to be colored. From the dye-house he took his little parcel home to his family, where his girls and boys were set to work with their cards and spinning wheels to convert it into yarn, the weaving of which, as the most laborious process, was performed by the oldest members of the family. Two persons were required for each loom, to throw the shuttle alternately back and forth across the broadcloth in the process of weaving. After taking his piece of cloth from the loom, he carried it to the nearest fulling mills. In the fullled or milled state, and sometimes fresh from the loom, it was usual for the



humble manufacturer to take his fabric to one of the Cloth-Halls for sale to the merchants; or to another class of manufacturers called clothiers, who formed a nap or pile upon the surface of the woollen fabric, by the continued fretting application or scratching of teasels—a sort of thistle with sharp hooked points, which seem formed by nature for this operation, being sufficiently elastic to produce the desired effect without impairing materially the texture. A couple of dozen of teasels or thistles, after being set in a little wooden frame, were used, one in each hand of the operator. The woollen cloth with its long shaggy pile was then put into the hands of the shearers who cropped it to a smooth surface. By this mode of manufacture every piece of cloth passed through several distinct workshops, and the mere labor of transporting it from one place to another formed no inconsiderable part of the cost.

The improvements in the machinery for manufacturing both cotton and wool were nearly simultaneous, the carding and spinning machines being equally applicable to each of these staple materials. But the ancient, inconvenient, desultory system is still pursued to a great extent.—The small manufacturers are still to be seen with a bale or two of wool on their way to the public dye-house, and then again transporting it to the carding-mills, some of which, in the neighborhood of Leeds, are supplied with work on a very extensive scale by such individual customers. At the carding-mills no other process is performed than that of converting the wool into the half twisted loose filament forming the rudiment of the thread called the roving or slubbing. From thence it is taken, packed in baskets, to the cottages to be spun on the hand-jenny, and woven; after which the fabric is sold at the cloth-hall to the merchant, who causes it to be finished at the various establishments adapted for the milling, napping and shearing.

After capital had become accumulated and machinery improved, individuals constructed mills capable of containing all the apparatus necessary for finishing a piece of broadcloth, from the dyeing of the wool to the pressing and packing of the goods. By combining all these operations on a large scale, one manufacturer was enabled to pay liberal wages to secure competent workmen in every department, and to save all the burthensome expenses of transportation and consequent delays; and at the same time to secure to himself the aggregate profit of several individuals.

It was also soon proved, notwithstanding the supposed advantages accruing from the subdivision of labor as hitherto practiced, that the cloths, which were produced by the proprietor who possessed the machinery for completing every process in the manufacture of a piece of broadcloth under one roof, were perfected with more care, and with a superior finish, from the individual vigilance bestowed upon each department. The utmost caution of the owner of the raw material had previously been of no avail in directing or controlling the operations of the workmen of the several distinct establishments, to which he had resorted for completing in detail the operations of this difficult branch of manufactures. From that period, Leeds, where several capitalists resided, began to increase with surprising rapidity, and the adjacent small villages, dependant on the prosperous avocations of the subordinate petty manufacturers, began to decline. The same system has finally become from necessity partially introduced into the adjacent villages also.

The great Cloth Hall in Leeds, the exterior walls of which are about 1100 feet in circuit, was formerly crowded by these petty manufacturers. There appeared to me to be at least 1300 stalls or benches, arranged in compartments like the pews of a church, where all the manu-

facturers once piled up their pieces of unfinished and finished cloths, and stood by the side of them as at the stalls of a market, ready to traffic with the customers who might present themselves. The prices of these stalls have fallen in value from the sum of several pounds sterling each, to a mere nominal consideration, the smaller manufacturers having gradually yielded in the competition with those possessing large capitals and improved facilities for the transaction of business at their private warehouses. A considerable number are still to be seen occupying their old stands in the Cloth Hall, as if reluctant to abandon the system to which they have been trained from their early youth; and possibly sustained by drooping hopes in their struggles against wealthy rivals. Whilst patiently awaiting by the side of their piles of goods the approach of purchasers, I have observed them, as I have frequently done the cloth manufacturers in the United States, with their fingers unconsciously employed in stroking the smooth nap of their own drapery, or snapping the well milled fabric of the skirt of their own coats, as a technical assay of its texture, whilst their thoughts were apparently wandering.

Every appearance denotes too plainly that the class of smaller manufacturers must give ground in competition with those who possess great capitals, and the advantages of concentrated machinery and skill. The Cloth Hall of Leeds, was once the most attractive object of curiosity to the traveller, and still, as a scene of no inconsiderable bustle and active business, is worthy of a visit. The greater portion of the woollen cloths exposed here, as before observed, are in an unfinished state, rough and shaggy, and bearing but little resemblance to the finished fabric as it appears when unrolled on the counter in the shops, to display the glossy folds and lustre produced by skill in the finishing processes. A person who might be an excellent judge of a piece of broadcloth when exhibited completely

finished, would be puzzled to make a profitable selection from the piles of half finished woollen fabrics.

The labor-saving improvements in the machinery for the manufacture of wool have here been few, compared with those effected in cotton mills since the period when the carding and spinning were simultaneously perfected in both of these branches of business. Having been conducted by Mr. G. of Leeds to view his extensive woollen manufactory, in which about four hundred yards of broadcloth are made daily, I had an opportunity of viewing one of the most considerable woollen, as well as cotton mills, in England.

The buildings, like those of most other similar establishments, are so arranged as nearly to inclose a large yard or interior open square, the main body of the manufactory forming one side of the square, and the weaving rooms for hand-loom, stove-rooms, dye-house, &c. forming the other sides. One great gateway serves for the entrance of all the workmen to their labor, and also for that of the raw materials upon which they operate. A single porter stationed at the lodge at the gate is enabled to extend a watchful oversight to nearly all parts of the premises. The interior area or yard is occupied partly by the gas-works, and other small out-buildings: Several hundred persons are employed in this mill, some of whom stated to me, in reply to my inquiries, that they had been in the service of the same house from twenty to thirty years. A few had stood on nearly the same spots on the floors during the greater part of that period, and furrows were worn by the long continued, constant tread of their feet. The oldest workmen have survived and outlasted successive sets of machines made of brass and iron, which have gradually been worn out whilst revolving under their inspection.

The first process is that of assorting the fleeces of wool



into six or eight different parts, according to the fineness of the several different portions of it. It is then sprinkled with olive oil and passed through a picking machine to mix it together. Afterwards it is spread upon the carding machines by boys. The little rolls of carded wool, about as large as the finger and twenty-five or thirty inches long, are made to drop in succession from the machine in the same way as they did forty years ago, and are taken up by children who join or splice them together, end to end, to form the continuous rudiment of the woollen yarn, called the roving.

An important improvement on this old plan has been generally adopted in the United States, founded on the same principle as Arkwright's invention for obtaining a continuous or perpetual roving from the cotton cards.—But instead of forming only one strand of roving from each card, the Americans obtain twenty or thirty at once from each. To produce this result, the two cylinders upon which the vibrating combs act to strike off the fleecy sheet of wool, are covered with strips or fillets of cards about an inch wide, leaving spaces between each encircling strip devoid of wire teeth. From each of these the comb strikes off a little narrow fleecy strand of carded wool, which forms the rudiment of the woollen yarn. Sufficient strength or tenacity is at the same time given to these slender filaments by compressing them between two rubbing surfaces, to condense the fibres to a more compact state. By this improved plan one boy will produce, from a set of carding machines, more wool prepared for spinning than three boys employed in splicing the short rolls in the old way on the machine with spindles, termed a Billey, and one man to operate it—the single boy being enabled to accomplish the labor of one man and three boys. The American manufacturers thus obtain an equal quantity of roving at an expense of labor less by about three hundred dollars a year



for each set of carding machines than the English manufacturer pays for the same work.

The spinning is here performed on a machine similar to the cotton mule; and the yarn produced is woven entirely on hand looms. A still greater economy of labor is obtained by the broadcloth manufacturers in the United States, by means of the power-loom. The hand loom, as has been before observed, is very generally used in England in this branch of the woollen manufacture, by which each weaver fabricates only four or five yards per day; whilst a girl in the United States will readily weave on a power-loom double that quantity at about half the expense.

The fabrics of broadcloth when taken from the loom are nearly three yards wide, and during the process of felting become shrunk in width about one half, and in length about one fifth. The peculiar property of wool to become felted is attributed to the formation of each distinct fibre with barbs resembling the scales of a fish. During the repeated strokes of the heavy beetles or fulling mill-hammers, the fibres are moved; and when put in motion the end next the root always advances, and the barbs or scales covering the sides prevent its retracting or returning to its original position. Thus the fibres become insinuated one with another, and produce the peculiarly compact state called "felted wool."

To scour the cloths of the oil and glue used in the manufacture, a surprising quantity of urine is collected from all quarters, and is fermented by the addition of pig-manure—truly a most delectable deterative compound to purify the delicate tissues which form a part of the drapery of a belle; and what may be deemed still more singular, it forms the hartshorn for refreshing her by its pungent odors when concentrated in the smelling-bottle. The rationale of this strange medley seems to be, to bring about a strong putrefactive fermentation of animal substances,

which, it is well known, yield during this process, abundance of the alkali called Ammonia. This alkali is thus not only more economically obtained than potash soaps are, but in its peculiar combination it is so nearly tempered of the proper strength, as not to endanger a corrosive action of the coats of the fibres of wool.

The fuller's thistles, or teasels, which were formerly set in small wooden frames, and drawn scratching over the surface of the woollen cloth by hand labor, are now set in long iron frames and are fixed around the circumference of a hollow wooden cylinder, as large in dimensions as a hogshead. The cylinder appears thus covered with millions of thistle-points, all bristling and keen as cambric needles. When these are all rapidly moving around on the revolving cylinder at the rate of about a thousand feet in a minute, the observer would suppose that at the first onset, when they touch the cloth, they would instantly tear it to pieces; but so elastic are these points, and so soon do they become softened by water from the wet fabric, that they are applied in successive fresh sets during a whole day to act against the surface of one piece of cloth. One of these machines, called by the workmen a *gig*, with its surface covered with several thousand teasels moving at the velocity above stated, would act more effectively than a dozen men, armed with only two or three dozen teasels in each hand. After the introduction of the gigs many workmen were deprived of employment, and mobs and machine breaking were for a time in fashion in the manufacturing districts.\*

After numerous ends of the fibres of wool have been

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\*In Leeds, two persons are usually employed at each gig to keep the cloth smoothly extended in width, to prevent wrinkles and damages to the fabric from the teasels. By the machinery now in use in the United States, this is effected without manual labor, and one boy can attend two gigs, and thus perform the labor which requires four men at Leeds.

thus dragged out from the body of the cloth, and are combed to one uniform straight direction, the beautiful lustre is imparted by the process termed steam-finishing. This is easily accomplished merely by rolling the cloth tightly around a wooden roller. One fold is thus made to overlap another, and to press down the smoothly arranged nap without disturbing it. In this compact state the roll of cloth is inclosed in a tight box filled with steam ; or it may be immersed in a kettle of boiling water during six or eight hours, after which it is cooled before being unwound. When this process is completed the nap of the cloth will always have a tendency to remain in the situation in which it was fixed by the pressure whilst rendered plastic by the heat of the steam or boiling water. This gloss remains permanently and is not disturbed by exposure to rain ; indeed, the cloth must be again immersed in boiling water to completely obliterate it.

The cause of the remarkable lustre which is thus imparted to broadcloth or cassimere is attributable to the regular level arrangement of the straight combed fibres of the nap which, like glossy locks of the well combed human hair, reflect the light from a regular surface ; and wool, being a substance like horn, may be moulded precisely like that material, as observable in umbrella and knife handles, the impression made or moulded upon it when hot being afterwards retained in the cold state.

The manufacturer near Bath, who first practically applied and invented this process, obtained a patent for his invention, and, for a time was rapidly accumulating a vast fortune from it ; having charged about 6d. sterling a yard, for every yard of cloth thus finished, or about  $2\frac{1}{2}$  dollars for every piece of broadcloth made and finished in this way in England. Even under this heavy charge it was found that cloths with the new finish would sell for 2s. a yard more. Stimulated by these tempting profits, the manu-

facturers infringed upon the patent ; and then soon followed the usual train of lawsuits. In the course of a trial, somebody swore that he had known a piece of cloth to have been once similarly steamed or boiled ; and thus terminated probably the most dazzling golden visions of the acquisition of vast wealth, by which an individual was ever flattered and deceived.

The nap after being torn up from the cloth, is shorn off to a smooth level surface, like that of the pile of velvet. Instead of the great blades, made to open and shut like those of common shears, revolving blades are now employed, introduced into England after an early invention in the United States. It is composed simply of six or eight steel edges or knives wound spirally around an iron bar of the diameter of about two inches, and resting upon an under flat blade. When the round iron bar is made to turn on its axis it carries the knives or blades around with it, each of which comes successively in contact with the under blade, and cuts off all the spiry fibres of wool that project from the surface of the cloth whilst passing under them. By this machine, one person can shear as much as a dozen men could do on the old single hand shears.

Taking a general average of the cost of making a yard of broadcloth in England, and in the United States, including that of the steam and water power, it appears that the American manufacturer produces fabrics of equal quality as cheaply as it is made in England. But widely different are their respective advantages of obtaining a supply of wool. The raw material is from seventy to an hundred per cent dearer in New-England than in Old-England.

The finest cloths and shawls are made from imported wool, some of which is sold in England for two dollars per pound. The English wool is not found to be sufficiently delicate and soft for the manufacture of the finest woollen



fabrics. In the production of long wool, called combing-wool, the English agriculturists have been very successful, and the worsted manufactures of this country have for many years been prosperous, in consequence of the abundant production of this raw material. The principal sort of English wool used in the manufacture of cloth, is obtained from the Southdown sheep, which yield fleeces resembling those of the half-blood merino sheep of the United States. The quality, however, of these fleeces is not so valuable as that of the American wool, owing to the chalky nature of the soil upon which the sheep feed.—The calcareous soil combines in some degree with the fibres of wool, and renders them harsh and disadvantageous to the interests of the cloth manufacturers. I have seen no fleeces shorn in England equal to those clipped from the breed of sheep introduced into the United States from Saxony. The American sheep, propagated from the Saxony breed, yield wool possessing all the desirable qualities, in respect to fineness and softness, of that imported from Germany. The inhabitants of Saxony may unexpectedly find rivals in the production of this great staple in the United States of North-America.\*

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\*So abundant are the facilities for raising sheep in some of the western sections of the United States, new lands being cheap and the climates mild, that their fleeces must at some future day become an article of export, and bales of American wool may hereafter be seen piled up on the wharves of Liverpool by the side of those of American cotton. Among other rapid changes of the course of trade and productions of human labor, this result may be brought about within the age of the present generation of men. It is probable, however, that English statesmen, ever vigilant over the interests of the people of their broad empire, will not suffer this great staple of manufacture to be admitted unrestricted, if the production of wool in the British Colony of New South Wales should prove adequate to supplying the wants of the mother country.

The wool produced in the United States already bears a very important relative value compared with that of the cotton picked from the bursting pod of the rival vegetable, which was named after it, "cotton wool."



The English fleeces are commonly washed much cleaner, and are brought to market in better order than those furnished by the American farmers. In addition to the great quantity annually produced from the flocks in England, there were imported into that country, in 1824, twenty-two millions of pounds, and in 1825, above forty millions of pounds of wool. Besides supplying her entire population with woollen goods, England exported in one year woollens valued at no less than about thirty-seven millions of dollars. Nearly one fourth was sent to the United States, to which country the exports from the town of Leeds alone, during a single year, exceeded \$3,800,000 as stated to me by the American Consul at Leeds. This great sum forms one twentieth of the value of all the aggregate imports into the United States. It was stated to me that a town in the vicinity of Leeds, containing a population of four or five thousand inhabitants, is entirely dependant for its prosperous business on the American market, the importance of which to the prosperity of this section of England appears every where evident.

Nearly all the manufactories are operated by steam power. A few mills, along the border of the river Ayre, derive their moving power from the fall of its waters. The amount of moving power available from this source is, however, inconsiderable, compared with the steam power

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From the circumstance that wool has been commonly manufactured and consumed in the United States near the spot where it has been produced, it has hitherto made no great show of its commercial value, like the article of cotton, transported in large ships, and apparent on the wharves of every seaport; but it forms no inconsiderable portion of the inland commerce of the country. It seems evident, that at no very remote period the manufactures of wool in the United States, based upon the low price at which this raw material may be there profitably produced, and upon a skill in the use of machinery not surpassed in any other country, must prove sufficient to supply not only the requisite quantity of fabrics for the use of the inhabitants, but also an important surplus for exportation to foreign nations.

which is used. Coal is found in great abundance in the hills around Leeds, and is delivered at the furnaces of the steam engines at a less price than the same fuel costs at Manchester. Mr. G. observed, that his steam engines are supplied with good coal at seven shillings and sixpence, per ton, or about one dollar and eighty-three cents a ton.

Some few of the mill-structures are built fire-proof, like those of Manchester. In one of them a fire broke out during my residence in Leeds, which afforded me another opportunity of examining the effects of its devastations on a fire-proof building. In this instance, the fire originated in a quantity of oiled wool, which had been suffered to lie in a heap against the chimney of the furnace, the warmth of which imparted to the mass an exciting heat that produced spontaneous combustion.

On entering the apartments after the fire had been extinguished, the floors appeared entire, covered with coals and ashes left from the consumed wool and wood work of the machines, the iron frames of which remained standing in their places. All of the polished parts of the metal were blackened and rusted by the smoke, which had also darkened the walls and ceilings, causing them to resemble the sooty interior of a baker's oven. By a strange miscalculation, the trap doors or scuttles, affording a communication from one story to another, had been made of wood, through which the fire extended its ravages to all the apartments and roof in one wing of the building. The roof composed of thin flat stones like those used for flagging the side-walks of streets, and supported by iron rafters, also remained as entire as before the fire took place. The very window-sashes, composed of cast iron, as most of the sashes of mills are, remained perfect, containing the fragments of shattered glass. Indeed, with the exception of the injurious effects of the heat and steam in rusting the polished machinery and destroying the small portion of

wood work they contained, the fire had spent its fury almost as harmlessly as if it had taken place on the iron grates of a furnace prepared expressly to sustain its action.

Rhodes' bombazets, manufactured at this fire-proof mill, are well known as an article of merchandize throughout the United States. In the manufacture of stuff goods the wool is prepared by first combing the long fibres or hairs by means of a sort of hatchel, precisely as flax is prepared. The operation, however, is performed upon the wool whilst it is exposed to heat, which renders the fibres permanently elongated and takes out the curls or kinks. The operation itself is called "combing," from its resemblance to the similar mode of smoothing the locks of the human head. The combed wool is passed successively between sets of rollers, to extend the fibres, and to reduce them to the rudiments of a fine thread, for which purpose machinery is employed similar to that used for manufacturing cotton. After this it is spun into worsted yarn.

The public dye-houses in Leeds are conducted on an extensive scale. One of them contains forty vats of cast iron, each of the capacious dimensions of seven feet in depth and of an equal diameter. A whole case of Bengal indigo is consumed every day. These blue vats are heated by steam, which in some instances is discharged with a rumbling noise directly into the purple frothy liquor, and to others it is admitted around the exterior of the iron vat. The art of dyeing is here brought to great perfection by the constant and extensive practice of the workmen; and the expenses are reduced by the full and active employment afforded to those engaged in the operations.

To compare the machinery of an English flour-mill with that of a similar mill which I had seen in operation in the the United States, I examined during one of my walks a large establishment containing eight or ten sets of stones, moved by the waters of the river Ayre, when its floods

yield a sufficient supply; and at other times by steam power. I saw here none of the labor-saving contrivances for receiving the grain and elevating it by machinery to the grain lofts, without manual labor, in little leather buckets fixed on an endless revolving band; nor the perfect arrangements for removing the hot flour as fast as it falls from the stones, and for stirring and cooling it previously to its being packed. There is indeed no flour packed in barrels in England, as is the universal practice in the United States, the ground wheat, like the grain, being here always transported in bags or sacks containing each four bushels. The standard of calculation of the merchantable value of wheat is the quarter of eight bushels, which is referred to in quotations in every price current. I have never seen a barrel of flour in England, except what was imported from the United States. Much of this was in a sour state, adapted for making the starch or sizing for the cotton manufactures. Above half the flour consumed in England, it has been stated, is ground by windmills, by means of the same sort of machinery as was employed an hundred years ago.

There is some legend or traditional history relating to almost every ancient building in England, which serves to amuse or interest the traveller who may stop to inquire and listen. Relating to this old mill is a royal grant of a singular kind. Having noticed over many of the doors of the dwelling-houses in Leeds, a stone fixed in the walls with a cross sculptured upon it, I inquired of a friend the cause or motives which induced the proprietors of these houses to place this singular and uniform mark so conspicuously on the front walls of their houses. He observed to me that the signs are affixed to the houses to indicate that they are out of the *soke*, and that the tenants are at liberty to buy their flour wherever they please, not being obliged to have their wheat ground at the old mill, which I just



visited. The term *Soke* being unintelligible to me, I obtained the following explanatory history.

King Stephen, in ancient times, according to the narration made to me, bestowed a royal grant on the proprietor of this mill, as a compensation for some assistance rendered to the royal cause. He arbitrarily ordained that the miller should have the exclusive privilege of grinding all the wheat for the inhabitants living within a certain district around his premises, which district was called the *soke*. To the present day, this ancient grant is rigidly enforced, greatly to the annoyance and discontent of the inhabitants of Leeds, over whose mouths, like those of his hoppers, the mill-owner has control. After several lawsuits, the inhabitants of a considerable part of Leeds have been compelled to take their flour, as they take their wives, for better or for worse, or pay the penalty of a fine, which informers employed by the miller are prompt to demand whenever they discover a suspicious sack from a distant mill within their privileged limits. A small district of land occupied at the time of the grant by a society of Knights Templars, or Knights of St. John, who were generally on the alert when good cheer was at stake, obtained exemption from this restrictive monopoly. When the religious societies were broken up and their lands sold, the right of exemption passed with the soil, and the subsequent occupants were required to affix over their doors the sign of a cross cut in the stone, to indicate their being out of the miller's reach.

It appears that there may be sometimes cause of complaint of frauds committed by the millers, judging from a statement in the newspapers of the detection of one of them in his practices of adulterating flour. The published account states, that a miller has recently been fined in a sum of about \$16,000 for mixing plaster of Paris or gypsum with the flour made from wheat, taken on bond from



the government or custom-house stores to be ground at his mill. The object in this case, however, appears to have been to defraud government of the duties on imported bonded wheat, the flour having been prepared for exportation and probably for being swallowed up by the sea rather than by their English customers.

The mill dams on the rivers in England are constructed of blocks of hewn stone, in some instances arranged in layers like a vast flight of steps, over which the water tumbles in small leaps and in broken sheets of foam. In some cases they are made with a smooth slope, or inclined plane, like the roof of a house. The hewn stones are cut to form close joints, and are laid in water lime.

The Ayre is rendered navigable, by means of locks, from Hull to Leeds; in which latter town is a small basin containing the canal-boats, of forty or fifty tons burthen, furnished with masts, and lying afloat by the side of regular quays. The wharves, covered with cargoes of merchandise, resemble those of a seaport, whilst the numerous masts, closely arranged together like a grove of naked pines, increase the resemblance. The boats can pass either to Liverpool or London by the canals.

Having been introduced by a friend to the proprietor of one of the principal flax-spinning mills, he accompanied us with much civility during a short survey of his works, which are probably the most extensive of the kind in the world. It was stated to us that there are upwards of nine thousand spindles in operation, each of which spins about as much flax as one person now does on the spinning wheel in Ireland. Two engines, one of which is of the power of seventy horses, are at work in one part of the establishment; and the steam power in all the buildings is rated at an aggregate force of about two hundred horses.

On entering a modern English steam mill, one of the principal objects of interest to which you are immediately

conducted is the first mover—the steam engine, which is always exhibited with pride, as being the greatest achievement of man in the useful arts. In this mill, the apartment containing the machinery of the engine is kept in very neat order. An ornamental flight of steps facilitates the ascent to the machinery, and the stone floor is so nicely cleaned, that one almost feels reluctant to sully it by the impression of dirty feet. Indeed, in this apartment, forming the parlour of the establishment, the ladies usually are delighted on finding that so much neatness is not incompatible with the movements of so magnificent a machine, which commonly appears oily and unsightly on board of steam-boats, where it emits also the odor of a frying pan, arising from the quantity of simmering tallow profusely used upon it. One of the engines feeds its own furnace with coals from a hopper placed above the circular grates, as has been before described, and operates in a most perfect manner. No rattling of the iron, or jarring sound is produced, and the only indication of your being where so great a power is generated and put in action, whilst you are not actually looking at the evolutions of the beam and fly-wheel, is the slight rushing sound of the steam, resembling the breathing of a slumbering infant. A tremor is perceptible at the moment of the condensation of the steam, when a force or weight equal to that of many tons is suddenly impressed upon the surface of the piston, and hurries with new impulse the revolving fly-wheel.

The proprietor, Mr. Marshall, showed us the library formed for the use of the workmen of the establishment. This library is sustained by a small periodical payment from those who use the books, for the reception of which a room is appropriated. The volumes bear evident marks of having been well thumbed. These mill-libraries, if the term may be allowed, are of late established by many of the proprietors of large manufactories in England, and are

very creditable evidences of their liberality and personal exertions, to render the men who are engaged in their employments both more intelligent and virtuous. For this excellent purpose, numerous mechanic's libraries have also been instituted throughout England; and the scholars and statesmen of this powerful country, with a philanthropy for which "unborn ages will call them blessed," have lent the sanction of their names, and the support of their talents, for the general diffusion of useful knowledge. This has been effected, too, on terms so completely within the means of almost every regularly employed and industrious laborer, that it can scarcely be said of the Mechanics of the present day, in the words of Gray,

"That knowledge to their eyes, her ample page,  
Rich with the spoils of time did ne'er unroll."

Regular employment and the full and steady reward of labor fall to the lot of comparatively the smaller portion of English laborers. Owing to the high price of all the necessaries of life, caused by taxation, they commonly feel little of that exhilaration of hope, which might induce them to qualify themselves, by reading and study, for filling the higher or more lucrative stations of society. Too many intelligent artisans with whom I have conversed seem to place their happiness, and to bound their wishes for the enjoyments of this life, within the walls of the alehouse.—Here they meet, drink their beer, smoke their pipes, and perhaps read over the Black-Book, containing a list of the great salaries of their rulers, whilst they discuss, often with no small share of eloquence and judgment, the oppressions of tithes and taxes, and seldom fail to embrace some of the best institutions of society in their denunciations of those which are exceptionable. The workmen or mechanics in many branches of business absolutely break off work for half an hour at 4 o'clock, and leave their workshops or mills, to go out to some adjacent alehouse "to their

drink" as they term it; or in plainer terms, to guzzle strong beer. The women also, in some instances, at the same hour of the afternoon go out to get a cup of tea, and frequently more potent refreshment. In the great mass of English laborers, who depend for their daily bread upon the will of an employer, or the fluctuations of unsteady branches of business, a sullen despair of ever being able to improve their condition destroys their ambition, leaving all their energies of mind concentrated upon expedients or absorbed by anxious cares. Notwithstanding the exertions which are made, the diffusion of useful knowledge must be comparatively slow among a large proportion of laborers in this, and every other country, where free schools are not established to lay the foundation and to create a taste for knowledge in early life, before the cares of business, or even the demand for infantile labor can render their time, thus appropriated within the walls of a school, a loss to their guardians or to parents.

One of the curiosities connected with this flax mill is a reservoir of water, of the superficial extent of about an acre, and of the depth of four feet, which is used for cooling the water heated by the condensation of the steam from the steam engines. Into one end of this small pond or pool is constantly pouring a rill of boiling-hot water, steaming as it flows; whilst from the opposite end of it the cooled water is drawn, to be again used for the condensing apparatus of the engines. Whilst we were standing on the bank of this reservoir of warm water, a seine was drawn, in the meshes of which were brought to land, not parboiled, emaciated fishes, as I had almost expected to see, but a fine large draught of the finny tribe, which were drawn ashore as lively and fluttering in the foaming water as if taken from the cool recesses of a brook or fish pond, instead of the tepid waters of a steam engine reservoir.\*

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\*These fishes could not have formed the subjects for the epigrammatist, who found on the table of a brother bard, during the absence of the au-



The great quantity of tallow used for the machinery and packings, and carried off into this reservoir, probably furnishes to these fishes a most abundant supply of food.

Flax, the raw material for these works, is imported from Germany, France and the Netherlands, in large quantities, packed in bales like cotton. Particular inquiries were made of us respecting the cultivation of flax in the United States, and the prospect of a future supply from that quarter for the English flax mills; and much surprise was manifested on receiving the intelligence, that large quantities of this raw material have actually been imported into the United States from Europe.

All parts of the preparation and manufacture of the linen thread are facilitated or completely performed by machinery. The first operation of hatchelling is accomplished by attaching a hank of flax to the circumference of a revolving wheel. The bundle of fibres is caused by the centrifugal force to diverge from the centre, around which it revolves, and to continue extended like the spokes from the hub of a wheel. A hatchel is placed in a proper position for the hanks of flax to fall upon it successively, as the wheel revolves. The tangled fibres are thus combed out, and every filament is arranged like the combed wool, or the hairs of the human head, to which the term "flaxen locks" has been applied by those who have contemplated with poetical enthusiasm, those

thor in search of fresh ideas after having become set fast for lack of them, a poem in its incipient stage, with only a solitary line, commencing,

"When the sun's perpendicular rays began to illumine the sea"—which he kindly finished by adding

"The fishes beginning to sweat, cried, bless us! how hot we shall be."—For the fish must here all be constantly in a situation like that of the two elderly ladies, who both retreated to one bed to cure a cold by the aid of a jug of tepid water. The cork accidentally came out, and they soon imagined themselves in a state of "lovely perspiration," by mistaking a sudorific cause for a sudorific effect.



clustering ornaments about the snowy neck of some inspiring heroine; and really it may be considered a flattering comparison, so beautiful and silky is the appearance of this article in this stage of its manufacture. I counted in one apartment more than fifty boys, who were attending these hatchelling machines. The next operation is to divide the long flaxen fibres by a sort of circular saw into short pieces, to form a regular length of staple, like that of cotton. The drawing and spinning are conducted on the same plan as practiced in the manufacture of that raw material. These short pieces of the hanks of flax are first spread or drawn out by hand on long slender flat boards. As soon as one of these long strips of board is covered with the flax thus drawn out into the rudiments of a roving, it is turned upon its edge, and the flax falls into a trough, from whence it is gradually drawn forward by the rollers of a head of drawing, like those used for cotton roving. After passing between a succession of these rollers, the fibres become extended longitudinally like worsted, and reduced to a filmy size and texture; when it is spun on spindles, formed like throstle spindles, into linen thread, suitable for fine drillings. Attempts to rival the finest threads spun on the single hand wheel have not as yet proved successful here; but very good linen is made, and particularly the fine brown linen drillings, worn for pantaloons by gentlemen.

Flax spinning, by steam power, is very rapidly increasing. Thirteen flax mills were erected in various parts of England during the year 1825. The time cannot be far distant when England will take the lead in the manufacture of flax and silk, as she has done in that of cotton. The increase of silk-mills, since the repeal of the duty on the raw material, has been still more extensive than that of flax-mills. Germany and France must eventually feel the loss of a considerable portion of their manufactures of lin-

ens and silks, and even the poor spinners in the humble cabins of Ireland, subsisting upon salted herring and potatoes, will be unable to compete with English capital, and machinery operated by steam power. Large quantities of linen thread are already sent over to Ireland, to be there woven into *Irish linens*. To Mr. Marshall, it is stated, belongs the credit of having greatly improved the machinery for the manufacture of flax. After going over a flax-mill, it requires a considerable portion of the remainder of the day to brush off the lint, which most abundantly accumulates upon all parts of the dress.

On a fine morning I took a stroll to view some copperas works in the vicinity of Leeds. Although, from the resemblance of the name, that material is often supposed to be a product of copper, yet in reality the copperas is manufactured from an earthy iron ore, called pyrites or sulphuret of iron, being a compound of iron and sulphur. This ore is spread over a field having a smooth surface of tenacious clay, rendered nearly as impervious to the rain as a slated roof, and sloping like a roof to conduct off into cisterns the rain water that falls upon it. By exposure to the air and rain, the decomposition of the sulphur and iron takes place in the piles of the ore heaped upon this inclined plane. The sulphur combines with the oxygen of the air, and forms sulphurous acid, which acid thus formed in the immediate connexion with particles of iron, combines with the metal and dissolves it, in the same manner as iron filings may be dissolved in a more expensive way by the immediate application of sulphuric acid. The new product is washed off the piles of ore by the rains, and, dissolved in the rain water, it is received in wooden cisterns at the bottom of the clay platform. This water is raised by pumps into large copper boilers, where it is evaporated until green crystals are formed, which are raked out of the boiler, and after being dried are packed up in large casks as the copperas of commerce.

During my residence in Leeds, several funeral processions have passed before my window through one of the principal streets. At the funerals of the poorer classes, the mourners proceed on foot to the grave, the men wearing large black cloaks thrown loosely over the shoulders. These cloaks, as well as mourning dresses for females, are hired for the occasion. One here frequently sees a notice of "mourning dresses to be let," advertised on painted sign boards. A choir of singers precede some of the processions, chanting dirges as they move slowly forward.—The voices of the choir, rising in measured cadence and sinking with the prolonged notes of the anthem, swell upon the ear like the farewell to the departed spirit. The hat worn by the deceased is also borne in the procession, and is a visible emblem, like the empty boots dangling from the side of the steed without a rider at the last obsequies of the warrior, reminding the spectator that he who once wore it "is not." The funeral anthems, still chanted here, are remnants of ceremonies, or customs, which modern refinement and fashion have nearly done away; but on occasions of this kind, they cannot but have a tendency to excite an interest and deep emotion in every human bosom, and cause even the passing traveller to pause for a moment from his hurried pursuits, whilst he listens to the dirge of a fellow-being,

"Gone to that bourne  
From whence no traveller returns."

In company with a friend I walked a couple of miles, by the beautiful borders of the river Ayre, to survey the celebrated ruins of Kirkstall Abbey. The hills here slope to the water's edge with a gentle declivity, forming a sheltered vale of great fertility. The rich meadows probably served originally to attract to this favorite spot the monks who founded the Abbey, the ruined walls of which now cover six acres of ground, and once contained as inmates

above five hundred persons. It was richly endowed, as indeed it must have been, to support so many persons in perfect idleness. Of this once vast and splendid structure, with its cathedral towers, and cloisters, and lofty walls pierced with Gothic windows half crumbled away, shattered ruins only remain, which all bear the impress of the wasting storms of time. Two of the towers still lift their fronts to the height of nearly 140 feet, seamed with many rents and fissures, and awaiting, feeble and tottering, the fall which seems to be near at hand, after having survived most of the works of man erected at the time these stones were taken from their native quarries. Around the base of the walls are heaps of fragments of masonry, half cemented by mortar, which have been precipitated from the pinnacles. Great trees have taken deep root in the ground once covered by the floors of refectories and halls, and have boldly pushed their extending branches horizontally through the windows, and upwards above the tops of the walls, by which they are inclosed like prisoners in narrow cells. A canopy of leaves usurps the place where the covering of the roof was once spread over from wall to wall.

The large Chapel still inspires the visitant with reverence, as he treads beneath its ancient dilapidated arches. A portion of the ruin presents to view the most singular spectacle of a vigorous growth of trees and shrubbery supported in the air upon arches, at a height of twenty or thirty feet from the ground. The roots have become insinuated into the mould accumulated on the level tops of a great number of vaulted apartments, in which one may walk, whilst a grove with all its roots and branches is above his head. These vaults are excessively damp and chilling. The ivy, which forms the never-failing decoration and indescribable charm of ancient ruins in England, grows here to a great size, the trunk of one of these creeping



vines, which I measured near the ground, being nearly three feet in circumference. It clings to the sides of the walls and binds together within the twisted folds of its branches, as within a sort of net work, the loosened stones, which its evergreen leaves nearly conceal from view ; and in its living embrace actually sustains some of the balancing fragments.

Here one may remain, and muse, until even a person of the most frigid temperament may become warmed by a sentimental excitement, and the sentimental may become transported by a vivid imagination to former times, until they behold in their "mind's eye" all the ruins swelling in grandeur to their original dimensions, and the mitred Abbot and bareheaded monks moving among the pillars of the chapel, or beneath the arches of the cloisters. To him who simply reads the description, without the excitement inspired by the actual sight of the remains of buildings so magnificent, all this may appear as spiritless and uninteresting as a tale twice told. These objects of contemplation never fail to fire the feelings of the actual traveller, and he as rarely fails on beholding them to attempt to communicate that glow, by the imperfect and feeble aid of his pen, which even the glowing tints of the canvass, with all the vivacity of coloring, and of light and shade, fail of producing. To view these ancient ruins of Abbeys and Castles in all the magnificence of their decay and desolation, and the Cathedrals still existing as perfect monuments of the splendor of ancient art, might even repay a traveller for the fatigues and privations of a voyage across the Atlantic.

The dialect of the inhabitants of the county of Yorkshire, as spoken in some of the villages by the lower classes, is so corrupt, that it seems hardly to deserve the name of the English language. The pronunciation, as well as the words, vary in so remarkable a degree, that it is often dif-



ficult, if not impossible, to understand the subject of conversation when a couple of persons of the laboring class are talking together in a familiar manner. All these Yorkshiremen have a truly wonderful habit of dispensing with the sound of the letter *H* when it commences a word, and of introducing it unceremoniously before all words beginning with a vowel, as if to make amends to this slighted letter of the alphabet for the uniform neglect with which it is treated. An anecdote is related of a lady from Yorkshire, who having come into possession of a coach, and having hired a London coachman unaccustomed to the peculiarities of the Yorkshire dialect, was one day taking an airing on a narrow road lying between a precipice on the one hand and a hedge on the other. With her usual strangely perverted accentuation, she directed the coachman to drive close to the 'edge, and as far from the h'edge as possible, omitting the *h* where it should have been accentuated in hedge, and transposing it to edge where it did not belong. This injunction was literally obeyed by the compliant coachman, who brought his mistress as near the brink as he dared to approach with the wheels, supposing her to have been desirous of viewing the prospect below; and he was convinced of his ignorance of the Yorkshire tongue only by the hysterical screams of his alarmed lady. A native of Yorkshire, a worthy member of the society of Friends, whilst holding forth at a large public meeting in another county, disturbed the gravity of the assembly by stopping short in his address to request that a window might be closed, to prevent the *h'air* from coming in. I overheard one Yorkshireman direct another "to put h'an h'A upon each bag of his wool," meaning to have each bale marked with the letter A, the initial of his name.

In laying some foundation walls near the river, where the gushing springs required much labor in pumping, to keep the excavation clear of the intruding waters, I no-

ticed six laborers employed in raising water by the machine called Archemides' screw, being a spiral screw inclosed in a long tight tube. One end of this tube being immersed in the water in a sloping direction, and placed on pivots to be turned by a crank, a portion of the water enters the cavity of the spiral groove, and keeping on the lower side is gradually carried forward and upwards by the revolution of the screw, until it is discharged from the open orifice at the top. This machine, however, when practically applied, does not appear to raise and discharge more water than could be raised and discharged by the same number of persons by means of the ordinary pumps. It may be conveniently applied when there is not sufficient room for introducing a large number of pumps into the pit or excavation. The mode in which Archemides' screw operates to raise water is the same as if a trough were placed in a sloping direction, like an inclined plane, with one end in the water ; and a board or float fitted to it, were to be used to push up the water before it to the top of the trough.

Oats ground into meal form a considerable proportion of the food of the laboring classes in this vicinity. It is either made in thin cakes, baked dry and crisp, or is boiled into a sort of hasty pudding, or fried like buckwheat in broad thin griddle-cakes. It is as generally consumed as Indian meal in the United States. At the usual hour of breakfast and supper, these cakes are carried hot to the houses of the workmen. Upon experiment, I found them as insipid as buckwheat cakes without the foreign aid of good butter and sugar.

Pattens are very generally used by the females when the fall of rain renders the streets muddy. The patten is simply a piece of wood, of the superficial size of the sole of the foot, to which it is secured by buckles or otherwise. A short iron standard, a couple of inches high, with a ring for the base resembling a stirrup iron, keeps the sole of

the foot two inches above the mud ; and the ring forms a broad base for the tread, to assist in preserving the balance in walking. The clatter of the iron rings resounds upon the stones of the streets from the frequent footsteps, like the noise produced by the ringing steel-shod hoofs of a troop of horse. These pattens, although not very ornamental to a pretty foot, or to the graceful movements of beauty, are nevertheless very serviceable in the preservation of health, by preventing the inroads of diseases originating from colds. On this account they might even be tolerated in the United States as a substitute for the light kid slipper of France, which may often be seen amid the snow on the side-walks of Broadway. It can, indeed, scarcely be a subject of surprise that so large a proportion of the female population should be swept off by consumption, where the light thin draperies, suited to Italian skies, are worn amid the frosts of a Russian winter. The introduction of the India-Rubber over-shoe may be hailed as an era in modern inventions by the admirers of bright eyes and of cheeks glowing with health and animation. They combine all the desirable properties of elasticity, lightness, and imperviousness to water ; and although somewhat detracting from the Chinese standard of female beauty as concentrated in the contracted outlines of a small foot, they may serve by way of contrast to display the symmetry of a well turned ankle with better effect. This consideration, aided by the kind cautions and injunctions of careful mothers and fathers, may after a time cause the good sense of the American belles to triumph over their pride, and to bring the India-Rubbers, as these shoes are termed, into general use.\* In the country villages of Eng-

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\*The increase of the use of India-Rubber shoes has of late been surprisingly rapid. In 1831, 23,000 pairs of India-Rubbers were sold by one person in Boston, and they have already formed a new article of com-

land, heavy *clogs* are commonly worn by the women of the laboring classes. These clogs are formed like a rude shoe, with the upper leather nailed to a thick piece of wood, which serves for the sole. They are in appearance cousins to the French sabots, or wooden shoes, and the connecting link between the latter and the real leather shoe.

#### RAIL ROAD AND COAL MINE.

The first locomotive steam engine was constructed in Wales, in the year 1806; but the use of steam-power for moving carriages over iron rail roads was first effectually tested on a short rail road terminating in Leeds, and connected with a coal mine three or four miles distant.—To examine this locomotive engine, rail road, and coal mine, by means of which the town of Leeds is furnished with the greater part of its supply of coals, I proceeded to the coal-yard, where the wagons, heavily laden with the products of the mine, are made to shoot their loads into horse carts, by which the coal is distributed over the town.

On approaching the rail road, a locomotive engine appeared in view, at a distance drawing after it thirty large wagons, constructed entirely of iron, and chained closely together in a long train. Each of these wagons weighs one and a half tons, and contains a load of two tons of coals, making the total weight of the whole train drawn along by the locomotive engine about one hundred tons. This immense weight is moved steadily at the rate of three and a half miles an hour. The engine takes the lead, presenting, to appearance, a banner of smoke streaming from its moving chimney, and emitting short quick puffs of

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merce in the United States. Economy as well as health has been found to result from the use of this vegetable product, which outlasts the best tanned leather.



steam, which rise from it like the condensed breath from the nostrils of a panting horse. The noise produced by the escaping steam at every stroke also so nearly resembles the labored respiration of some exhausted animal, that you almost insensibly identify its active movements with those produced by muscles and sinews, and flesh and blood ; and begin to feel commiseration for its struggles with such an enormous load. From some such supposed resemblance, the workmen used to call this locomotive engine "the stalking horse." As the whole caravan passed by, the engineer appeared seated at his ease on the little platform, attached to the end of the engine for containing the coals to supply it whilst moving over the road.—He was smoking a pipe, and engaged in conversation with an old lady, whom he had taken up on the road, to afford her a gratuitous ride. Here was exhibited the spectacle of a weight of 100 tons, equal to the freight of a considerable vessel, moved off with greater facility and speed than the common loaded horse cart, and with the same expense of an attendant. No other exertion is required on starting than the mere turning of a steam cock or valve. An additional shovel full of coals will maintain the proper speed in lieu of the whip and spur, and the closing of a valve will check it more suddenly than the reins will stop a well trained horse. Not even the common precautions of driving are required ; as the flanches or edges of the wheels project below the sides of the rails, and prevent them from running off on either side ; and the machine pursues its course without deviation. The boiler is replenished with water from a pump placed midway of the rail road, where the engineer, at every trip, stops a few moments.

The very ground seems to tremble with the load as the train passes along. It is indeed a gratifying spectacle to view this vast mass of matter moving apparently by its own agency, as if it had lost its characteristic inertness,



and had acquired animation from being touched by Promethean fire. You may here, indeed, well imagine that you are beholding inert matter forming a triumphal procession to honor Science, practically applied by the inventive genius of man.

The construction of rail roads appears to be of somewhat ancient date, as they have been in use nearly one hundred and fifty years in England. Previously to 1680, it is stated, wood was generally used as fuel in London, and in most other parts of the country. Soon after that period, coals came in demand, and a new impetus was given to the coal trade in the mining districts. The consequence was, that from the increased demand at the mines, great inconvenience and expense were incurred in procuring the necessary number of horses to convey the coal over ordinary roads to the ships. To improve the miry roads, wooden rails or ledges were first laid, and so fitted that the wheels of the common wagons then in use would run upon them. By this improvement it was found that one horse could draw as much coal as three or four horses had previously been able to do on the common roads. In 1738, a further improvement was made by substituting cast iron rails instead of the wooden ones. The unwieldy old fashioned wagons were finally dispensed with in 1770, and instead of one great wagon, several small ones, each capable of containing one or two tons of coals, were used ; a number of them being linked together by chains in a train. By thus diffusing the weight over a large portion of the railway, the principal cause of the failure of the rails in the first instance was obviated. Cast iron rail roads have since come into general use, not only for coal mines, but as roads for facilitating traffic between different places, and as branches to navigable canals. The iron rails are cast in pieces from three to six feet or more in length, and the end of each piece rests on blocks of stones 16 or 18 inches

square, firmly bedded in the ground. The rails are laid a little above the surface of the ground; and where horses are employed for draught, the pathway is levelled between them and filled with broken stones, or macadamised, as it is termed. Wrought iron rails have been in some cases substituted for those of cast iron.

In using locomotive engines, the power was in the first instance applied to turning the wagon wheels, upon which the steam engine rested with its weight upon the rails. The smooth surface of the iron was, however, found to afford so little resistance to the motion of the wheels, that they often turned around, where there was an ascent in the road, without starting forward the machine with its loaded train. It is necessary to make the railways very level in order to obtain the full benefit of this mode of conveyance, and consequently great expense must often be incurred in maintaining levels, by making in some places deep cuts through hills, and in others filling up valleys by embankments or causeways. On the Leeds rail road, a line of cogs is cast upon one side of the rail, into which a cog wheel of the locomotive engine is made to play like a pinion wheel on a stationary rack. By this contrivance the engine can be made to exert its whole power in propelling loads, without causing the wheels to turn around ineffectually upon the smooth surface of the rails. On hills too high to admit of being levelled, it is usual to construct stationary steam engines to draw up the wagons from one level to another. In descending inclined planes of rail roads, a lever is brought to bear upon the circumference of one or more of the wheels, the friction created by the pressure of which effectually retards the descent to the desired rate of velocity.

Desirous of exploring the coal mine which furnishes such an exhaustless supply of coal for the consumption of Leeds, I walked along the whole extent of this rail road,

to the mouth of the mine, situated at the base of a lofty hill. The railway enters the hill beneath the brick arch of a vaulted passage-way, and disappears from the sight in the impenetrable darkness which veils every thing within the mouth of the mine. Two iron railways or tracks, one to accommodate the ascending and one the descending wagons, are laid sloping at an angle of nearly five degrees with the horizon, in a straight line of descent beneath the hill.

A boy having in charge a number of empty wagons was about descending into the mine at the moment of my arrival. Availing myself instantly of the opportunity, I sprang into one of the wagons, where I stretched myself out amid the coal dust on its bottom, receiving at the same time strong injunctions from the lad not to lift hand or head above the edge of it. He then detached the clog, and set the wagons free, when they began slowly to move forward of themselves, and to descend by their own gravity upon the inclined plane of the railway, with a hollow rumbling sound resembling thunder, as the echoes were reverberated along the narrow passages. They continued to rush downwards with a velocity that every moment increased, until it became fearfully rapid. The roof of the passage, composed of flat rocks almost as smooth as the ceiling of a room, soon became so low as nearly to touch the top of the wagons, and it was sufficiently evident that if the boy's injunctions had been disobeyed the loss of the offending member would have been the forfeiture. Thus constrained to a recumbent posture, and feeling myself hurried with extreme impetuosity into unknown regions of darkness, I began to imagine that the wagon, by some accident, had broken loose from its proper retarding checks. These apprehensions were increased on receiving no answer from the boy to my loudest inquiries and shouts, which were scarcely audible amid the roar of the metallic

wheels upon the iron rails. I ventured to take one peep just over the edge of the wagon, and beheld the dim light of day visible through the already distant aperture of the mine, like a small pale star seen through the opening of a dark cloud ; and it truly seemed to be streaming for the last time on my intent eyes. It occurred to me, from the unchecked impetuosity of the ponderous wagon, that like the unruly steed of John Gilpin, it had ran away with its recumbent passenger, and would pass the proper stopping place, and launch its contents over the brink of some perpendicular shaft. The unseemly termination of my career in the dark abyss of a coal mine, with the headlong launch from the precipitous brink, and the moments of suspense whilst curvetting in the air, before the stunning crash of bones, consequent on striking upon the rocks at the bottom, were all before me in imagination. Then followed the keen recollections of far distant friends and country, from which I imagined myself about to be cut off, by being run away with by a vile coal cart. I had often commiserated when a home-sick schoolboy, the hard lot of one of Virgil's heroes, who, whilst pressing the dust of a foreign shore, thus turned his last thoughts toward his native land,—“*et dulcis moriens reminiscitur Argos.*” It now only remained to await in patience the result of my imprudence, and to watch the massy rocks of the roof, upon which the lights, distributed at long distances in the descending passages, throw an occasional gleam, giving to every indentation the appearance of a dark shadow, flitting rapidly past at the distance of only a few inches above the face. The moments thus occupied seemed like an hour, whilst the wagon continued rolling down the inclined plane of the rail road for nearly half a mile in a regular line of descent ; at the termination of which, the velocity it had acquired was gradually checked by a rise of the road, and it stopped gently itself in the

very place intended for it to remain stationary to receive its destined load of coals.

Relieving myself from my recumbent posture and raising my head with alacrity, I found myself in a vast cavern, vaulted with solid rocks. A glare of fire, shining through the half opened door of a furnace, partially tinged with red streaks of light the jutting angles and points of rocks forming the sides and roof of this gloomy cavern, and rendered objects dimly perceptible amid the haze of a sort of dusky twilight. In one corner was visible a large steam engine, with its ponderous balance wheel and working beam in rapid motion ; and the white faces of a number of miners near it were contrasted with their crow-black dresses, rendered more distinctly perceptible by the lights of their candles. They appeared at work around the mouth of a perpendicular shaft or chasm of a still deeper coal mine, which gaped with a hideous dark aperture. At this distance under ground I had at first supposed myself at the bottom of the mine ; but I found that I had only reached a stopping place, about half way down to the lowest galleries.

Upon alighting from the wagon, I proceeded to look around and examine the “antres vast.” The unexpected sight of a steam engine in these subterraneous regions, with all its machinery in motion, pumping water and raising coals from the black orifice of the perpendicular shaft ; the noise of the iron wheels of the wagons traversing upon iron roads—the moving lights, and the voices of the miners rising discordantly at times above these sounds ; all conspired to produce an overpowering sensation of surprise and doubt, as if I had felt myself to be laboring under the delusion of a confused dream.

After my vision had become accommodated to the dim light, enabling me to receive distinct impressions from surrounding objects, I directed my steps toward the engi-



neer to inquire at what depth his engine was situated below the surface of the ground above, and how the smoke from his furnace was discharged? He replied, that the smoke ascended through a chimney 196 feet in perpendicular height, before it reached the surface of the ground, and passed off into the open air. Looking down into the yawning mouth of the shaft of the coal pit, where all was black as night, I inquired of him the depth of it. This shaft, he replied, is sunk to the lower seams of coal, 210 feet below the steam engine, and about 400 feet below the surface of the hill above.

The descent into the perpendicular shaft, when lowered down by the rope connected with the steam engine, is so rapid, as to create a sensible resistance or reaction from the air, which rushes around the broad platform on which you stand erect, as if a current of wind were blowing upwards from the mine, almost sufficient, as the miner observed, to lift the hat from the head. The lifting of the hat, however, appeared to me rather attributable to the tendency of the hairs of the head to stand erect, as if electrified with frightful sensations always produced on being lowered into a mine by the peculiar movements of the steam engine. Its reciprocating strokes, accelerated and retarded at particular points of each movement, seem to allow the platform that sustains you to sink away from beneath the feet as if the fibres of the rope had yielded, and left you without support in mid air—somewhat after the manner that a platform drops from beneath the feet of a rogue on the gallows.

The lowest veins of coal in this mine are about three yards thick. The workmen loosen and detach fragments of the coal-seam from the solid mass with their picks, which they swing at times whilst lying on their sides, in order to undermine large portions at once. The coal is then thrown into small boxes or wagons having iron wheels

fitted to run upon light railways, which extend from the extremities of the mine to the bottom of the perpendicular shaft. Each of these small wagons contains about five hundred pounds of coal, and with this load is easily pushed by hand toward the main shaft, where it is rolled upon a wooden platform, like that attached to a scale beam. Loaded with one of these wagons the platform is instantly lifted by the steam engines with rapidity to the top or mouth of the shaft. Four of these small wagons are then rolled upon a large one in the great cavern, and are drawn out to the open air upon the inclined plane of the rail road by which I had descended. The coals are emptied from the small wagons upon the sloping bars of an iron grate or screen, in order to sift the fine coals from the coarse lumps. The large coal slides down over the iron bars into the wagons, which convey it to Leeds; whilst the finer particles pass through the interstices between the bars. After twenty or thirty of these wagons are filled, the locomotive engine is put in motion, and the whole convoy starts off, under the guidance of one man.

At the coal yard in Leeds, the rail road terminates, elevated upon arches; beneath which the horse carts, employed to distribute the coal over the town, are driven to receive their loads. The engineer touches a latch in each wagon, when the false bottom drops, and the coals fall through an aperture in the crown of the arch into the carts placed directly under them to receive their loads of two tons each. Thus from the time the coals are first broken from their beds in the veins and thrown into the small wagons, to the time they are discharged at the doors of the furnaces or dwelling-houses, they are not once subjected to the expense of being lifted by manual labor, by means of the shovel. This systematic arrangement enables the proprietor of these great works to afford the product of his mines at the reduced price of sixteen shillings

a load of two tons, or eight shillings per ton, delivered at the coal yard ; or eighteen shillings a load of two tons, dropped at the doors of the houses in Leeds. From 150 to 300 tons are daily brought to Leeds. The coal is delivered at eight shillings per ton, or sixteen shillings a load, at the furnace doors of the steam engines, belonging to proprietors who take a large and regular supply for their works.

This extensive coal mine and rail road, as well as many hundred acres of excellent land covering the coal seams, belong to one wealthy individual. Such is the scale of magnitude on which individuals work the coal mines in England, where about 14,000,000 of tons are annually excavated from the pits for the use of the inhabitants.

Having noticed the peculiar whitened appearance of a part of the rocks forming the side and roof of the mine, I was induced to inquire the cause. One of the miners replied, that it was the effect of an explosion of fire damp that had taken place a few weeks before, by which twenty-six men had been killed. The carburetted hydrogen gas was fired in the mine by the carelessness of one of the workmen, who exposed the light taken from one of the safety lamps invented by Sir Humphrey Davy. The introduction of this lamp, which justly entitles the inventor to be ranked among the benefactors of mankind, has conferred an important benefit upon the miners. When managed, however, with carelessness, or when the miners are induced to plunge in fancied security into the deleterious gas, as it is stated, frequently proves the case, nearly as many lives are eventually lost, either by the violent explosions or by secret and fatal poison inhaled at every breath. The safety lamp is merely a small candle or lamp, inclosed within wire gauze, the meshes of which are so fine as to cut off the communication of the ignited gas, (as it is philosophically accounted for,) by reducing the tempera-

ture between the cold iron wires too low for the combustion of the burning gas to extend through them. Complete success has attended the experiments made with the safety-lamp, even when immersed in strong mixtures of the inflammable carburetted hydrogen.

It is not so much the effect of the fire of these explosions, as of the violent rush of air through the passages, as through the tube of a cannon, that proves so instantaneously destructive to the miners; whose only safe resort in such cases is to throw themselves flat upon the floor of the mine, to avoid being dashed against the side of the passages. The miners are also subject to fatal accidents from the falling in of the loose fragments of the roof of the mines, and from various other risks attendant upon the operation of mining. They expose themselves to all these dangers, and forego the enjoyment of pure air and of the cheerful light, for the compensation of three shillings and six pence (85 cents) per day. After listening to the recital of the catastrophe of the explosion in the mine, I procured a guide, and commenced a return from its damp and chilling caverns, to the upper regions of green fields.

There is a surprising difference between the perfected machinery employed for working this coal mine, and that of a similar mine which I once visited in the vicinity of Richmond, Virginia. At the mouth of the Virginia coal pits, as they were operated a few years ago, some half naked negroes appeared engaged in hoisting up a tub of coal, at long intervals of time, by the aid of a meagre horse. The same coal was afterwards to be transported in common wagons over roads of the worst sort, at a very heavy expense. Were the same advantages of machinery and of rail roads employed in Virginia for raising coal and for conveying it to the vessels in James River, which are so successfully adopted in the English collieries, the coal might be delivered at New-York, at as cheap rates as it



is furnished from the New-Castle collieries to the consumer in London. The strata of coal are more advantageously located for the operations of mining in Virginia, than in most of the English mines, the veins lying closer to the surface and extending nearly horizontally, instead of sloping in seams that descend to great depths.

The resources of the United States in respect to a supply of this most valuable mineral fuel are as yet imperfectly developed; and indeed few of the inhabitants of that country are fully aware of the abundant provision of coal stored up for the use of future generations of men. Some of these resources have already been disclosed by the labors of the miner. A brief sketch of a few of the coal districts of the United States, as affording an estimate of their value when compared with those of England, may prove not uninteresting to the American reader.\*

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\*To obtain a brief survey of some of the principal coal-fields of the United States, we shall follow the Atlantic shores southwardly from Nova Scotia. The first coal mines which are to be found in pursuing this course, are in Rhode-Island; and those of the seaboard of Pennsylvania are the next that occur. Both of these locations yield only the species of coal called "Anthracite," which burns with little or no flame. The working of the Rhode-Island coal mines has been abandoned, in consequence of the admixture of quartz in the veins, in which it is so intimately blended in fine seams, that the furnaces wherein the Rhode-Island coal is used become soon completely clogged with slags and cinders.

The anthracite coal mines of Pennsylvania may be classed among the wonders of the world; for there are here whole mountain-tops covered with carbon. Scarcely a thin turf presses upon the silvery masses of the coal on some of the tracts, where it is dug or quarried in the open air, under the blue vault of heaven, instead of being excavated from mines beneath the dark vaults of overhanging, dripping rocks. The rays of the sun, and not the miner's glimmering lamp, afford light to the laborers. One of the mountains near the river Lehigh, which I visited in the autumn of the year 1830, appeared to be covered with a crust of coal varying in thickness from ten to forty feet. From only one small tract of less than twenty acres had this crust of coal been removed to the bare rock, forming the substratum, leaving a chasm of the depth of the thickness of the vein, surrounded by perpendicular cliffs of the pure untouched



On the continent of North-America, bituminous coal has been found on some of the arctic shores visited by the exploring parties sent out to make discoveries in those re-

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coal, which glittered in the sunbeams like magic walls of polished jet.—The superstratum of turf and soil, and the fragments of rocks which form the superficial coat, are removed from above the upper surface of the mass of coal by rail way wagons, which descend a few hundred yards to the brow of the mountain, from whence their loads are shot forth, to fall several hundred feet, with a noise resounding amid the surrounding silent forests like the crash of thunder.

One of the most remarkable circumstances, attending the working of this coal mine, is the transportation of the coal from its original bed to the Lehigh river, a distance of eight miles, without the aid of horses, or the application of steam or water power. The rail way from the mountain top forms one continued inclined plane, over which the loaded wagons travel in obedience to the laws of gravitation, as if they moved instinctively by their own agency. Indeed, they press forward down the declivity with almost unrestrainable impetuosity. By a miscalculation of the engineer, the slope of the rail way was made too steep, and great difficulty has been experienced in curbing the velocity of the descent of the coal wagons. Two or three of them having broken loose and run away from the person who had charge of them, and having every moment acquired increased velocity in their impetuous course, they were finally dashed to pieces at the foot of the inclined plane. A section of the rail way is now fixed with a short turn, to throw off any unruly wagon, which, Jehu-like, may come dashing along too furiously, acting as its own driver. The wagons are made to discharge their loads into the canal boats by means of the machinery called at the Newcastle Collieries “a coal staith.”

On taking a seat in the pleasure car to ride down from the summit of the mountain, the traveller is reminded of youthful days, when as a frolicsome school boy he may have mounted his sled to slide down the glib ice-covered surface of some steep hill side; for the car when once started glides down the declivity of eight miles in an equally rapid manner. The driver, or rather the superintendent of the car, takes his seat in front of the vehicle, in the place usually occupied by the coachman, and forthwith begins to crack his whip. The rail way car, on being released, starts forward like an impatient race-horse. The whip is again cracked by the officiating driver, as if to urge forward his invisible horses, and every instant the speed of the car is increased; until finding yourself hurried along at the rate of nearly twenty miles an hour, you almost involuntarily hold in your breath, in half suppressed apprehension, as if you were dashing forward down hill with horses running at full speed. The deception,

gions of perpetual frost. In Nova Scotia are the most northern mines of bituminous coal, which are advantage-

aided by the repeated cracking of the whip and the chirping of the driver, becomes so complete, that it is difficult to convince yourself by ocular demonstration, that you have not steeds attached to the car. Whilst skimming over the ground with the swiftness of a bird on the wing, then, indeed, you realize that a horse could hardly keep pace with the swift career of the car.

The empty wagons are drawn back to the summit of the mountain by the toilsome labor of mules, who descend again, however, without effort in their little moveable stables or pens, mounted on wheels. The conductor stated, that these animals have become so habituated to riding down, that they will evince their mulish dispositions when deprived of their expected pleasure, and will endeavor to step into their pens and to lie down, rather than to budge on foot to the bottom of the mountain. They actually appear to take vast satisfaction in their ride, with their ears erect and long faces peering gravely out at the sides, like passengers in a stage coach, to enjoy the prospects. The spectacle of a number of mules, thus transposed from the usual station in the harness, to the dignified situation of inside passengers, travelling with a greater speed than that of a mail coach, produces an effect so truly ludicrous as inevitably to produce a smile.

The agent calculates sanguinely that three or four hundred thousand tons of coal per annum may be furnished from these coal quarries.

Pottsville, situated in an adjacent valley, is a considerable town, entirely built up within five years by the profuse expenditures made for the construction of rail roads and canals, and for the purchases of lands containing coal. There is here exhibited one of those wonderful instances, not uncommon in the United States, of the sudden change of a solitary place into a bustling, populous town; and one of the still more wonderful instances of the inconsiderate haste with which novel speculative projects may be got up, to the delusion and ruin of many when the bubble bursts. The following statement will show what has been effected in Pottsville in this way, since the completion of the Schuylkill Canal, and the opening of the new field for enterprise in the coal trade.

According to an account published in the *Miner's Journal*, Pottsville contained in 1825 only one frame building and four log houses. In 1830 the town contained upwards of 4000 inhabitants. Some of the new buildings have produced the following rents.

Two hotels have each been rented at the rate of \$ 2000 per annum.					
One do.	"	"	"	1500	"
One private dwelling-house	"	"	"	1000	"
Twenty or thirty	"	"	"	300 to 700	"

ously worked. From this quarter, very considerable quantities of excellent coal have of late years been introduced into the United States, in successful competition with coal

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The foundation of a theatre to be constructed of stone of the dimensions of 100 feet by 70 feet, was laid in 1830, and a sort of Exchange completed, containing a reading room in addition to the public room, the walls of which were tapestried with numerous expanded sheets of colored maps of coal lands, and of plans of new towns with spacious streets and squares, all dignified with sonorous, exalted names. Plans of newly projected rail roads, and of canals with summit levels, gained by successive lifts of locks, graded in black lines rising one above another like the successive steps of a stair case, were all exhibited on paper. The engineers at least appear to be masters of the art of drafting and coloring; for so well blended are the soft tints of blue, pink, and purple, to show the defining shades upon each distinct tract or lot, that the particolored draughts even seem ornamental to the walls to which they are affixed, and offer tempting exhibitions of pretty house lots, facing on spacious squares and avenues, where in reality the native forest trees still remain unmolested by the axe.

The post-office receipts of this mushroom place of the wilderness exceeded in one month 500 dollars. There are five daily lines of coaches, which enter Pottsville, and the mail and passengers on the rout toward New-York are transported about twenty-one miles on a rail way wagon, upon the painted pannels of which are displayed in conspicuous letters, "United States' Mail Car." This is probably the first instance in which the improved mode of conveyance for the purpose of transporting passengers and the mail by regularly established lines of rail way cars, has been practically carried into effect in the western world.

The speculators and land jobbers have furrowed with trenches the soil of the forests and the cliffs of the mountain sides, in their researches to discover veins of coal.

When deluded with flattering prospects of the accumulation of immediate wealth, how extremely infatuated men may become, will appear from a sketch of some few of the speculations in the purchase and sale of coal tracts and lots in or near Pottsville. Some of these may remind one of the tulip speculations of Haerlem. The coal fields are too abundantly distributed by the wise provisions of a kind Providence over a large region of the country, to be grasped by the monopolizing hands of a few individuals. The coal trade in the United States, like all other kinds of regular business with free competition, must eventually fall into the hands of those who possess the greatest advantages of location, improved by the most careful industry and skill. It must, indeed, be reduced to a mere daily-labor business, where the workmen will gain moderate but certain

brought across the Atlantic from Liverpool, and even with that from the Virginia mines, although subjected to an import duty of two dollars sixteen cents per chaldron. The

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compensation, like those employed in agriculture or manufactures;—and investments of capital will continue to be made here until the profits become reduced to the general level, which sooner or later must always take place to regulate the details of every branch of human industry.

For a lot 20 feet square in the town of Pottsville, where the stumps still remain in many of the streets, 700 dollars has been paid. A lawyer of an adjacent village bought a tract of wild land at a sheriff's sale for 90 dollars, and afterwards sold the same for 53,000 dollars, being at a rate of advance of nearly 600 dollars for every single dollar of his original purchase-money. Mr. W. invested 16,000 dollars in land in this vicinity, and sold one half of the tract for 90,000 dollars. One of my fellow-passengers pointed out from the coach window, whilst travelling on the road, a lot which he had just bought in a newly settled, or rather in a newly platted town, called Tomaqua. This favorite lot was situated on low land, in the midst of some fallen trees, the stumps of which were still erect, surrounded by the bright chips that indicated the recent application of the axe. Our purchaser, after pointing out the four stakes forming the corner boundaries of his little parcel of ground, observed with evident exultation, that his lot was really a great bargain at the price he had paid for it—only 450 dollars, being of the convenient size of 50 feet by 180 feet, suitable for both a store and dwelling-house; fronting on Jackson-street on one side, and on a noble avenue extending down to the Sharp mountain on the other side. For these noble streets and avenues, I looked in vain. They are, without doubt, all nicely draughted and colored on the plat, and are thus rendered palpable to the imagination of the purchaser; but to the optics of an ordinary observer, there was apparent here only one muddy road, winding amid stumps, and not a house within a considerable distance of this choice lot; and the noble avenue to the Sharp mountain appeared to be a glen tangled with bushes,—a fit retreat for the fox or the rabbit. Several of the passengers in the coach were discussing projects of laying out new towns, as familiarly as if the process were attended with no more difficulty than the planting of a potato patch.

There are five principal rail roads near Pottsville, each from seven to twenty-two miles in length, with extensive lateral branches diverging from them. These rail roads are all connected with the Schuylkill canal, and are used principally for the transportation of coal. The Port Clinton rail road cost about \$10,000 per mile. Some of its branches are constructed over level ground with surprising economy, and the view of them might dispel the illusive idea of the costly expenditures commonly supposed to



best quality of this coal is sold in New-York and in New-England at about nine or ten dollars per chaldron.

It may appear to Europeans a most extraordinary fact, that

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be necessary for the completion of all works bearing the name of a rail road. After the ground is levelled, some of these light rail ways are laid, as it was stated to me, at a cost not exceeding four dollars for a rod, being little more than is necessary for building good post and rail fences on each side of it. Pieces of timber, notched to receive the joists forming the rails, are laid at the distance of four or five feet asunder across the path of the road. Upon these cross pieces are laid the parallel rails, upon the top of which a thin bar of iron is nailed.

At Port Carbon, where the Schuylkill Canal terminates, several rail roads converge and also terminate as at a common centre. To reach the canal basin at a convenient level, some of the rail ways are elevated on posts ten or fifteen feet in the air, as if mounted on stilts to cross the low-land interval; other rail ways, laid on the marshy soil, cross beneath them, apparently creeping humbly between the multiplied legs of the centipede structures which strut loftily over them. At Port Carbon a lively scene is presented to view of the movements of the wagons which are made to shoot forth their loads of coal into the canal boats, with a startling crash, when the latch or spring is touched by the workmen.

Over these rail roads the power required to draw a load, is estimated at 1-150th of the load moved; whilst on the more perfectly constructed Baltimore and Ohio rail road, it appears from experiments made, that the power required to move a load, is ordinarily 1-240th of the load. Under the most favorable circumstances, with the improved friction-roller axles, the power required is only about 1-350th of the load. A pressure equal to that of a weight of 10 pounds, would move a wagon weighing with its load, 3500 pounds.

The price of coal delivered at the doors in Pottsville, was in 1830, about two dollars and twenty-five cents a ton. The workmen contract to mine it for 70 or 80 cents a ton, or to get it out on their own account, and allow to the proprietors of the land  $1\frac{1}{2}$  cents per bushel, or about forty cents a ton. The apertures of the mines around Pottsville are visible on the sides of the hills, like the mouths of great ovens, around which are heaps of black stuff, the rejected portions of the veins. Glossy pieces of this mineral are in some spots laid bare in the beds of the rivers by the currents of water.

Near the centre of the town of Pottsville, the gallery of a coal mine enters a hill horizontally about a thousand feet. Seated in a coal wagon and enveloped in a miner's dusty jacket, the visitant may in a few minutes explore the mysteries of the operations of mining, as here conducted.



some of the principal cities of the New World, surrounded as they were a few years ago by interminable forests, have been of late years in a degree dependant for the ne-

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The horse trots off to the extreme end of the mine, and in darkness, the wagon follows, rumbling over the rail way. Here are to be seen caves, excavated beneath a roof of rocks distilling drops of water like a gathering dew, and workmen breaking the shelving seams with their picks; and lastly the stable for the horse, economically dug or scooped out of a coal bank, where one would suppose that a residence for a night would give the animal stiff joints, or a rheumatism for life. The effect of our survey of this mine was heightened by the appearance of the miners, who were all sturdy Scotch highlanders, each with a lamp stuck in his cap, from whence just sufficient light was shed to render their white eyeballs and teeth visible in the disc of their sooty faces.

The sound of hammers and the click of trowels were ringing in all parts of the town of Pottsville, and new houses were rising amid surrounding stage poles on every street. To supply the demand for the necessary building materials, and to put them fitly together, great numbers of mechanics and laborers were congregated at the public taverns and private boarding houses, which were all excessively crowded with new comers. It was difficult to find a house or even a hovel that was not teeming with inhabitants. An anecdote was here related to me of a German settler, who having brought a load of boards to Pottsville, and afterwards having an opportunity of employing his horses to advantage in drawing together building materials, deposited the box or body of his wagon on a vacant lot. In a day or two afterwards, his job being completed, he returned to the place where he had left a part of his vehicle, and found it elevated upon posts and boarded up beneath, and the smoke of a household fire actually issuing from the end of it. The first attempt to replace the wagon body on the axletrees, produced a concussion of the fixtures, that brought forth from beneath it a stout Irishman, who spying the wheels, put himself into a belligerent attitude to defend his home and his fireside; and boldly challenged the dismayed German to take his choice of turning him out either by force, or by a peaceable and lawful three months' warning. The appeal of the honest German to the sense of justice, of his tenant was answered on the part of the latter by pointing to a wife and three children, snugly stowed away in the premises, for whom he had been able to find no other shelter. It was after some trouble that the German was finally able to gain possession of his property, thus compelled to delay the uncovering of so many roofless heads, until other accommodations could be looked up for them.

An interesting tour of only three days will allow the traveller on his

essary supply of fuel on the English coal raised from mines three thousand miles distant from the hearth upon which it is consumed.

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way from Philadelphia to New-York to visit these mining districts, and to view the beautiful scenery of the Lehigh.

On the banks of the James river, in Virginia, bituminous coal is found in inexhaustible quantities, and on the southern shores of the United States, in Alabama, coal deposits of excellent quality have been also discovered.

When we turn our eyes towards the interior of the great continent of North-America, including the valley of the Mississippi, the vast stores of coal, distributed between the Alleghany mountains and the Missouri, in quantities adequate for the supply of whole nations, must strike the mind of the observer with astonishment. On the banks of the Ohio, at the head of the navigable waters of one of the great sources of the Mississippi, "the father of rivers," excellent bituminous coal may be procured, with nearly the same facility as gravel from a bank. There are no coal mines in England, nor indeed in the world, so easily worked as those near Pittsburg in the United States. The veins are observable on the hill sides, without even requiring the displacing of a turf to uncover the black masses, from which cubical fragments are in some places turned up by the wheels that furrow ruts in the public roads. To save the labor of even transporting this fuel, a glass-house was built opposite Pittsburg under a bluff, from the impending side of which the coal was thrown into sloping wooden troughs which served to conduct the rattling fragments in their descent at once to the very doors of the furnaces at the base of the cliff. The landlord of an inn, at which I lodged, a few years since, in Ohio, made use of the coal mine itself, near his door, as a coal-house, and resorted to it with his bucket for every fresh supply of fuel required to replenish his fires. On descending the Ohio river, our party landed upon the river-bank above Marietta, to view a coal mine, from which several of those large rudely formed boats, called arks, were taking cargoes, to be transported down the river. After walking from the water's edge about a hundred yards, we came to the foot of a bluff of rocks, with a perpendicular front thirty or forty feet high. The aperture for entering the mine appeared conspicuous with its dark open mouth fronting the river and cut into the face of the rocks, where the vein, nine or ten feet in thickness, terminated abruptly in plain sight. The horizontal entrance of a broad barn door could not have offered greater facilities of ingress and egress. The operations of mining were here carried on with simple machinery, the whole apparently not being worth more than a hundred dollars, including the value of the horse, which drew out the coals in tubs formed by dividing a barrel. The tub was placed upon a sledge to be transported to the boats,

## THE FIRST OF MAY.

About the first of May, the beautiful valleys and hills in the vicinity of Leeds are covered with the green herbage, which indicates the well established dominion of spring. The leaves of the trees and hedges are expanding, and the early blossoms of the fruit trees spread their rich colors in showy clusters upon the branches. The advance of spring in the central counties of England is about as early as in the vicinity of New-York; but the wheat harvest is there matured several weeks earlier than here. Although there are slight frosts at night, yet during mid-day the air becomes mild and bland, producing the feelings of fresh vigor, which the poets ascribe to the balmy vernal breezes. The brooks, however, which flow

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This rude vehicle, by a considerable effort of the horse, was drawn sliding over the smooth surface of the sloping bank to the edge of the river, where the contents of the tubs were discharged into the arks. Even here, from want of skill, a person had been killed a few days previous to our visit, by the falling of a loose fragment of a rock from the roof of the mine. Indeed, so great are the facilities abundantly diffused on the banks of the Ohio for obtaining excellent coal, without the necessity of sinking deep shaft pits or of constructing costly machinery to drain them, that the price of this article of fuel is reduced to three or four cents a bushel; being merely the expense of the labor of digging and carting it. With this advantage of cheap fuel, and an abundance of iron ore, Pittsburg has already become one of the most important iron-making districts in America. By means of this abundant supply of coal and iron, the manufacture of steam engines has been most extensively carried on in Pittsburg, nearly one hundred having been made in that city in 1831. Here too are found corn and cattle at the lowest prices, a mild climate, and unbounded territories of fertile lauds. With this abundant command of all the requisite materials for giving vigor and efficiency to human labor, so far exceeding those of the old world, what limits even in imagination can be prescribed to the successful enterprise of the inhabitants of this fortunate region! The bearing and influence, which may one day be exercised, "for weal or wo," in morality, in science, in the arts and in manufactures, by the vast population, destined at no distant period to fill the valley of the Mississippi, cannot be regarded without the deepest interest, by the present generation of men.

through the valleys for many miles around Leeds, must fail of exciting the poetic lays, which are usually so freely bestowed in praise of crystal streams flowing through meadows enamelled with flowers. So numerous are the dye-houses and fulling-mills, located upon every water course, that the soapy compounds and unfixed dyes used in the processes of the woollen manufactures, on being washed from the fabrics, tinge the streams sometimes of a purple, and sometimes of a blue or saffron color, whilst every ripple is covered with frothy bubbles of soap suds.

*May Day.* The first of May is not now observed as a holyday, as it formerly was by the younger classes of the village population of England. It was once a common practice for the swains and maidens to meet on this day on the village green, and to form dances around a tall mast, thirty or forty feet high, which they decorated with the earliest flowers of spring, choosing on this occasion, the loveliest maiden of the circle, to be crowned with a chaplet of flowers, as Queen of May. A few of these May poles are still to be seen on travelling over the inland portion of England, being kept up in such instances frequently by some neighboring squire or nobleman, who may feel gratified in preserving the primitive rural sports of a may-day festival. The May poles are formed with horizontal arms, the extremities of which are encircled with hoops; the festoons of flowers, and verdant branches are hung upon them in such order as to produce the appearance of a cone of blossoms and foliage.

Many of the country seats in the neighborhood of Leeds are pleasantly situated upon the green slopes of the hills, and the trees and copses, by which they are usually surrounded, are very ornamental. A country house at which I dined, not far from Leeds, is rendered delightful by beautiful pleasure grounds, green houses, and gardens, combining in one favored spot, all the luxuries which are



understood in England by the term “comforts of a country residence.” The building itself is spacious, constructed of hewn stone, with extensive wings for the offices and kitchens. The centre is decorated with a lofty portico of hewn stone, supported by fluted stone columns, wrought with much beauty of workmanship. The interior is furnished richly but not gaudily. The nursery, for the security of the children who occupy it, the proprietor observed to me, was constructed fire-proof, having iron beams and stone floors, with no other wood work than what is necessary for the doors. It thus seems that there is not only great care bestowed in entailing and preserving estates in England, but also in preserving the children who are to enjoy them.

The servants who attend the table and take their stations behind the chairs, are dressed in liveries of bright colors, as is commonly the custom of attiring the footmen and servants in the families of the gentry and nobility of England. Some of these liveries, formed of patches of red, yellow and other gay colors, attached to or forming the cuffs and collars of the coats and trimmings of other parts of the apparel, bear no small resemblance to the motley uniforms that are worn with such vast satisfaction by the soldiers at some of the militia musters in the United States.

The prospects from the windows afford all that is most captivating in an English landscape. You have the expanse of a fertile vale, improved to the utmost by cultivation, and intersected by the waters of a winding river. The spires of a distant city, and the mouldering ruins of Kirkstall Abbey, with all its crumbling arches half buried beneath the verdure of the overhanging ivy, and the far distant hill tops covered with groves, by turns fix your gaze, and draw forth involuntary exclamations of admiration.

After dinner, we took a stroll over the grounds. We

were first conducted to a green-house in which flowers of all climates requiring fostering protection and shelter from wintry frosts, are carefully preserved, arranged in neat order—some designed to exhibit their beautiful blossoms, and others to impart sweet odors. In another green-house we entered the steaming atmosphere necessarily maintained to bring to maturity beds of pine apples—and in still another we found ourselves surrounded by the golden fruit of the orange and the far extended branches of the clustering grape vine. In the open air, extensive ranges of brick walls are erected to shelter the trees which require more heat to mature their fruit than is afforded by the transient gleams of sunshine of an English sky. The branches of various fruit trees are spread out like a fan upon these walls to receive every ray of the sun. Hence the peach and several other sorts of fruit are called “wall fruit,” from the fact that they are raised successfully only on the sunny side of walls. Wire and cloth screens serve at once to protect the tender wall fruit from early frosts, which nip the embryo fruit when “winter lingers in the lap of May,” and to screen it when ripe from the depredations of birds. The humbler glasses of hot beds are resorted to for ripening the melons, which in the warmer climate of New-England are matured in the open air. Even Indian corn is not ripened here in ordinary years, but it is frequently planted in the best English gardens, that a few stalks may annually lift on high their broad flaunting leaves, as a sort of outlandish product, to adorn the border of a walk, and perhaps to flatter the pride of the proprietor of the grounds. He thus beholds all classes of the vegetable kingdom assembled, like the captives from far distant nations brought together in a Roman triumphal procession, in subjection to the art that has in a degree subdued nature, and caused the vegetable tribes of every climate to live and flourish as vigorously

in an English garden as in their native soil. Throughout England an ear of Indian corn, as a sort of curiosity, may be seen suspended at the shop windows of the seedsmen's stores, where it serves as a well known sign. On inquiring for my old acquaintance the yellow-faced pumpkin, I found that it is held in little consideration out of the borders of the land of thanksgivings and pumpkin pies. The squash is known by another name and is rarely raised in the English gardens. An American gentleman resident in Leeds stated to me that he had seen at a shop window a dried squash and an ear of Indian corn labelled "American fruit."

Grapes raised in the green-houses, are of delicious flavor, and are exposed for sale in abundance in the fruit shops, at 40 or 50 cents per pound. Apricots are sold for about two cents each, and peaches from four cents to twelve cents each, although of ordinary quality.

The very occupants of the apartments in the stable and pig-stye partake of a share of the comfort of the wealthy proprietor, in their several spacious stalls. The cows here leisurely chew their cuds in rooms better built and warmer than those which the poorer classes occupy in England.—Indeed, easy affluence and comforts are apparently diffused upon every object around the mansion—even the hare here acquires confidence, and enjoys his unmolested range fearlessly upon the lawn. Every thing conducive to the enjoyment of life, which wealth can command, is collected around the favored abode of an English country gentleman.

The dampness of the climate of England sustains a growth of green mould or moss which gathers upon the trunks and branches of trees. Covered with these lichens, the bark has on this account a very different external appearance from what it exhibits in the less humid climate of the United States. An American may frequently be

unable to recognise the native forest trees of his own country in their new climate, unless such trees happen to be in leaf. I have noticed no locust or acacia trees; nor hickory trees and sycamores, and few chesnut trees. The fruit of the species of chesnut called the Spanish chesnut, cultivated here, is of nearly thrice the size of that produced in the United States.

Forest trees of all sorts are carefully cherished in the parks adjacent to mansions in the country. After an estate has remained sufficiently long in a family for the oaks and other trees, planted by the early ancestors, to have attained their full size, it becomes a subject of no small share of family pride; for it ostensibly bespeaks an ancient family line, which in this land of hereditary distinctions is next to a noble one. Indeed, the nobility are found freely to associate with the members of the ancient families of the kingdom. To cut down and sell these old "paternal oaks" is deemed the last act of spendthrift prodigality. A sentimental pang appears actually to be experienced here at the falling of a stately oak, like that described by Tasso, who assigned a spirit or genius to each tree to which the axe was applied. The staring red of a new brick house, erected by some "novus homo," or founder of the fortunes of a new family, is regarded by the sticklers for rank with a sort of aristocratic shudder.

One can hardly avoid moralizing, at times, upon the singular channels in which human pride is directed.—How different, in this respect, are the feelings of a republican freeman of the United States, and of a nobleman of England. The former prides himself on his own actual skill or genius, which may have advanced him to distinction and to the first honors of his country; and takes pleasure in recounting the early difficulties which beset his path at the commencement of his career, in order to



show how successfully he has triumphed over them. The latter, in the absence of the merit of personal exertions, is willing to rely on the system of gradation of honor by hereditary descent and family blood, although as Pope observed, it may have "crept through scoundrels ever since the flood."

In regard to the taste for the preservation of venerable trees around a mansion, the inhabitants of the new world have much to learn from the example of those of the old world. The pioneer of the western forests seems to have taken a pleasure in devoting to destruction every noble tree within a furlong of his dwelling. These, if spared, might have furnished a refreshing shade to himself and to his children after him, and even might have increased the value of the estates where they may have been spared to ornament the naked fields and hills.

The timber-trees when felled in England, are severed at the roots below the surface of the ground, or grubbed up, as it is termed, in order to prevent waste of the timber, instead of being cut down as commonly practiced in the United States, where the unsightly stumps are left to encumber the ground for years, before they become sufficiently decayed to be removed.

*Bills of Exchange.* In the negotiations of business payments are made by bills of exchange drawn upon bankers. These bills are transferred by one trader to another, each one endorsing his name thereon successively. They are drawn payable at different periods after date; and before they come to maturity and are payable, they may in the course of business, have intermediately served for paying a dozen or more debts, and have become covered with names endorsed thereon, each of which gives additional security to the last person who receives the endorsed bill. The bills are generally drawn on bankers in London, by the mercantile houses and manufacturers resident

in other parts of the country. Nearly all the cash transactions of the country are thus managed through the hands of the London bankers, who open with each of their correspondents an interest account at the rate of four per cent, and charge  $\frac{1}{4}$  of one per cent for accepting and paying the bills of exchange drawn on them. If a manufacturer or merchant in Leeds or Manchester make a purchase of merchandize, he either gives his own bill on his banker in London for the amount of the purchase money, or endorses over any bill of exchange he may have in his possession, in payment, discounting the interest for the unexpired term to the period when the bill may become due. If the receiver of the bill have no opportunity of negotiating it, he remits it to his banker in London for collection. The notes of the Bank of England, as well as gold and silver coins, are principally used for the payment of workmen and the current expenditures of individuals, rather than for purposes of mercantile transactions on a large scale, which may be conducted by the merchant with the greatest labor-saving facility by means of these negotiable bills. London thus serves as the grand banking focus for the whole kingdom, and, it may be added, for the whole civilized world. In the United States, every town and even country village is made a petty focus of banking transactions, at an enormous aggregate expenditure for salaries of cashiers and contingent expenses, in addition to the loss of time of myriads of bank directors, almost every able-bodied man capable of bearing arms being gratuitously engaged in this service. Bills of exchange or notes, instead of being endorsed over as negotiable paper to pay debts, are discounted at one of these numerous banking institutions, and the proceeds are received in bank notes to be applied to the extinguishment of the claims of creditors, and to form the universal circulating medium of a paper currency throughout the country.

The public inns are frequented by great numbers of traveling agents, who traverse all parts of England with their patterns and samples of goods, to obtain orders for their employers, and to settle the bills for the sales made in distant towns. They are termed, technically, *travellers*, or *commercial gentlemen*, and for their accommodation one of the largest halls of the inns is usually appropriated, and designated in capital letters painted over the door as the "COMMERCIAL ROOM." Here they collect around the fire side in the evening, after the labors for the day are terminated, and sip steaming glasses of whiskey punch, and of brandy diluted with hot water and flavored with lumps of sugar. Pipes of tobacco serve as interludes between these strong potations, until, under the operation of the narcotic fumes of the tobacco and the more powerful fumes of the hot liquors, their conversation begins to decline, a drowsiness, which they call "a night cap," comes over them, and they retreat to their beds. This mode of passing an evening may not be universally adopted by the travelling agents; but with very many of them it seems to be a custom which every stranger has ample opportunities of observing. Through the agency of these travellers, the English have attained as much system and perfection in the sale, as in the manufacture of their goods.—They are indefatigable in their exertions, and search for purchasers by going from town to town, and from store to store, where they display their samples and cards without being discouraged by repeated refusals.

At Leeds, I visited a school established on the Lancasterian plan, and supported by voluntary contributions.—The scholars appeared well dressed in clean apparel, exhibiting evidence of the maternal care at home exerted to render the children decently attired when abroad at the public school. One master had here the sole charge of 340 scholars.

By the Lancasterian plan of instruction, learning seems to be acquired by a sort of mechanical process, and being unaccompanied by an effort of the mind, is commonly soon forgotten. Indeed, I have sometimes thought that knowledge went through the heads of juvenile scholars in a Lancasterian school as a leaden bullet is reputed to find its way through a witch,—without leaving any lasting impression behind it to mark its course.

The Lyceum established at Leeds, where lectures on scientific subjects have been delivered, is very creditable to the gentlemen who have by their ardor imparted new life and interest to the diffusion of useful knowledge throughout this community. A building is exclusively appropriated to the reception of articles illustrative of natural history, such as shells, minerals, and stuffed birds, insects, &c. ; all of which appear to be preserved in the most perfect order by the attendant, who resides with his family within a portion of the edifice fitted up expressly for this purpose. The females are thus enabled to lend their labors to keep things in order. The careful labors of a housewife are no where more necessary, than in gleaning after the footsteps of the slovenly scholar, occupied in literary investigations and experiments.

#### ENGLISH COTTAGES.

On a fine May morning we left Leeds for Ripon, about 27 miles distant from the former place. Few enjoyments can surpass those which the traveller, seated upon the open top of an English coach, derives from the contemplation of the beautiful prospects of the highly cultivated districts of England. At this period of the spring, when the increasing heat of the sun tempers the air to a bland, genial warmth, and gives fresh impulse to the blood, the traveller is peculiarly well prepared to view with delight the



opening leaves and blossoms of the trees, and the brightening verdure of the herbage of an English landscape.— Here all the luxuriance of a naturally fertile soil is cherished and promoted by the highest possible cultivation bestowed by human skill and industry.

Soon after leaving Leeds we passed the beautiful gardens and pleasure grounds and extensive well wooded parks belonging to Lord Harewood. This nobleman is proprietor of many thousand acres of valuable land in this vicinity, including the village of Harewood. His cottages are built of cut stones, and are tastefully ornamented with little garden plots, laid out in front of them. The fruit trees covered with blossoms, and the creeping vines forming curtains of verdure, sprinkled also with gay blossoms, nearly cover up some of the walls from sight. These simple and economical decorations of the country house, are more truly agreeable and attractive to the eye than the columns and stately portico, fashioned by the chisel of the sculptor. The neglect of these natural and cheap modes of improving the appearance of farm-houses is lamentably common in the United States, where the pride of the occupants too often leads them to incur the expense of erecting great houses, often three stories high, to lift up their exposed naked fronts without a tree or shrub to throw a grateful shade about them. In frequent instances these tall houses remain with unfinished rooms, and with several windows closed by boards instead of glass; or with broken panes stuffed with old hats, or other articles readily applicable to close the open chinks. Whilst surveying in the pride of their hearts their lofty unfinished structures, the proprietors are not aware that such buildings appear to most persons of judgment at once as monuments of the pride and folly of the builders; and excite pity rather than admiration. Thus has a misguided taste often been the cause of useless expense for the purpose of attempting pleas-

ing architectural displays in the country, where a more agreeable result might have been attained in a simple and cheaper way. The building, however low and humble, which is embosomed by trees, and the walls, however rough, that are screened by a curtain of the honey suckle, trumpet flower, or other creeping vines, with a small patch of ground in front of them containing a few common wild flowers, display in the country a far more attractive appearance. A trifling cost bestowed on these cheap natural embellishments will allow the proprietor to adapt the size or plan of his edifice to his own convenience in point of internal arrangements, whilst he may diminish the expense commonly sacrificed in architectural decorations for ornamenting the exterior to please the eyes of strangers.\* This village is rendered so neat in appearance from the taste thus bestowed, that it might serve for a model of a poet's description of rural residences. Some of the pretty cottage houses, as a friend stated to me, are hired by gentlemen, who pass the summer here with their families.

#### ENGLISH GAME AND GAME LAWS.

In the beautiful broad parks and pleasure grounds, and even in the common open fields, pheasants and hares are to be seen from the window of the coach. To protect this game from the depredations of poachers, several men are

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\*If it were not trespassing upon the domestic province of the fair of the United States, it might be suggested to their consideration, that although they are themselves the most attractive objects, in the palace as well as in the cottage, yet the home where they are destined to preside, and dwell with husbands, children, or brothers, will lose none of its charms to induce absent ones to return to it, if associated in recollection with overmantling vines and flowers; and the bright eyes and dimpling smile of the loveliest maiden, will not be seen to disadvantage at the window overhung with honey suckles and roses.

constantly employed as game keepers to traverse and watch the grounds, by night as well as by day. Notwithstanding their vigilance and their frequent desperate encounters with the intruding poachers, which are sometimes terminated in blood-shed, the markets for the clandestine sale of game are, it is said, always well supplied. Hares, pheasants, deer, and various other kinds of game abound to a much greater extent in England than any person would suppose possible in a country so thickly populated. The flesh of wild animals is here more prized from the difficulties of procuring it, than from any peculiarly fine flavor it possesses. The common English venison has rather the flavor of fat insipid mutton, than of the wild venison taken in the American forests. The general abundance of game is attributable to the severe enforcement of a code of laws, called the Game Laws, which confine the right or privilege of sporting to persons who have certain legal qualifications. None but those who possess a real estate of an annual rental value of about 500 dollars, or who take out a regular license, and pay a duty of about sixteen dollars a year, "shall use any dog, gun, net, or other engine for the purpose of killing any game whatever, or any wood cock, snipe, or quails, &c ; or shall assist in any manner in taking and killing by any means whatever any game." The penalty of killing game without license is about one hundred dollars ; but if an unqualified person go forth in the night for the third time with the intent of taking game, such an aggravated offence is here deemed of sufficient importance to have the poor convict transported beyond seas to Botany Bay for seven years. It has been stated "that if an unqualified person be only suspected of having game, or any dog, gun, or snare for killing or wounding the same, his house may be searched ; and if any net or snare, pheasant or partridge, fish, fowl or other game is found, the offender may be im-

mediately carried before a justice and fined ; or be sent to the house of correction, and be there whipped and kept to hard labor. To prevent the fraudulent use of certificates, the lists of the names of all the persons who may have taken out regular licenses in each county is published in a newspaper. One or two closely printed columns of a paper I have seen occupied by the names of these duly authorised Nimrods.

The taxes imposed by government in the shape of Game duties amounted in the year 1828 to above 800,000 dollars, and the taxes on dogs amounted to the important sum of £182,999—equal to about 900,000 dollars, making an aggregate sum of about 1,700,000 dollars paid to government by the wealthy for the gratification of their passion for hunting.

It must be thus apparent, that hunting is a very favorite amusement in England ; and like most other amusements in the land where the higher classes do not condescend to make business a source of occupation and enjoyment, it is often pursued to so great an excess as to become a passion. Accounts are occasionally published in the newspapers of the loss of fine horses from the headlong precipitancy of the chace, not to mention the broken necks of the riders. The proprietor of these domains, Lord Harewood, annually expends many thousand dollars in supporting packs of hounds and horses merely for the chace. The hounds of a deceased nobleman were lately sold by auction by his executor, and the very names of each of the several dogs were published in the newspapers, with short eulogies on the characters of each, extolling their respective good qualities. I took the pains to procure a statement of the prices they were sold for under the hammer. One of the “hounds of high degree” was sold for about 325 dollars, and one for about 270 dollars ; being more than the best horse will bring in the United States. The whole



pack of this canine establishment was absolutely *sacrificed* under the hammer by this forced mode of sale for about 1300 guineas, or 6500 dollars ! In the same paragraph detailing the results of the sale, it was observed that the proprietor had “generously provided for the declining years of an old hound, by furnishing to him the comfort of a separate kennel.” A single hound has been sold in England at a price exceeding seven hundred dollars.

A greater tribute of admiration can hardly be paid to the Divine Wisdom, which has implanted such wonderful attributes of intelligence in brutes, than the pride which men are found to evince, when by their superior cunning and skilfully devised contrivances, they can succeed in deceiving or circumventing the sagacity of some of the tribes of the brute creation. Every possible representation of flies and of worms is fabricated by the angler to deceive and ensnare the finny race, whose animal necessities of hunger are made instrumental to their destruction by tempting them to the baited hook, attached to the almost invisible hair, or filament of transparent snooding. Unable to depend for success on their own less perfect senses, men have turned to account the acute instincts, and more powerful faculties of one class of animals to aid in hunting their fellow brutes. Where the power of scenting his game is wanting to the huntsman, he resorts to the dog ; and where speed is wanting, the horse and the hound are both trained to lend their aid ; and even the piercing eye of the falcon, with a full command of the scope of the horizon whilst poised on his wings amid the clouds, has been rendered subservient to the designs of the keen sportsman. With such unerring perfection, when trained by human skill to seek out the wild game in their lairs, do all of these subservient animals perform their tasks, that the hunter himself must often pause to admire the beautiful symmetry of forms, and intelligent movements, and sa-

gacious calculations of beings, which seem almost to be degraded by being called "brutes;" and whom he is ready to adopt as companions to amuse and beguile him in his hours of field exercise, and relaxation from the cares of life.

An American, accustomed to consider foxes merely as robbers of hen roosts, can hardly imagine the degree of interest which this animal excites in the breast of a real English fox-hunter. To enjoy the pleasure of a foxchase, the wealthy sportsmen not only maintain the packs of hounds for hunting, but also breeds the foxes to be hunted, thus keeping the whole of the details of a fox-hunt within their own control, to be enjoyed at pleasure. They prepare suitable spots for the burrows, which they cause to be planted thickly with tangled, prickly thorns. To these artificial retreats the foxes resort, thus secured from being molested by pursuers. A band of men of congenial tastes collect together with their fleet hounds and horses in the morning, after a man has been employed during the previous night to stop the holes in the earth, whilst the foxes are absent from home and prowling about the farm yards. As soon as a fox is started, off they all race, with hounds at full cry, audible for miles over the adjacent country; and the horses following close at their heels, bearing the huntsmen, whom you may readily see at a great distance with their scarlet coats, riding at full run, as if their very existence depended on their speed—leaping hedges and ditches in their precipitous career, and ignorant when they commence their bound, whether they may terminate it in a quagmire or at the bottom of an unseen precipice. Broken necks of course sometimes result from these blind leaps, the risk of which, the huntsmen say, serves to deepen the interest of the chase. A troop of spectators mounted on ponies, and all sorts of steeds, bring up at a remote distance behind the train of the pursuers, all eagerly following the footsteps of one poor fox.

One man is required for attending the stable for the horses, and another the kennel of the dogs. One is employed to lead the chase as a professed huntsman, and another, who is called the whipper-in, to close it and to bring up the rear, keeping all the straggling dogs within due bounds. Considerable buildings, called kennels, with suitable yards, are constructed, as well as stables for horses, and houses for the families of these attendants, and food is to be furnished for them all; and moreover, taxes are to be paid on all.

The old hunters addicted to the sports of fox-hunting are sometimes so completely absorbed by the pursuit, that it continues their ruling passion even to the last moments of their earthly race. One of them, it is recorded, made a dying request, that his fellow huntsmen, at his obsequies, should give three clear, rattling view—halloos, over his grave. Another ordered that his horse should be decorated with the tail or brush of the last fox he had killed, together with his cap, whip, spurs and girdle, and thus accoutred be led in his funeral train; whilst a third requested that a pad of a fox might be placed in each hand and buried with him. The annual expenses of some of the packs of hounds, with all the necessary attendants, horses, &c. have exceeded in many instances eight or ten thousand dollars, and in some cases even 15,000 dollars per annum.

The passengers in the public coaches always manifest much interest on beholding the pheasants in the fields, and rarely fail of pointing them out on passing in view of them. Their interest is thus excited on account of their being deprived of the free right of hunting.\* Were the

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\*The passion for sporting pervades even the breast of the shopkeeper in London. The following anecdote, related by one, reputed as a strict observer of "decorum and propriety," may be quoted to illustrate a cockney's first sporting excursion. The first important step necessary was to

unrestrained indulgence allowed to them in England which is allowed to all persons in the United States, reserving merely the question of trespass and damage on private property by trampling the crops upon the ground, all these unqualified persons would here soon feel the same indifference for field sports as very generally prevails in the latter country.

#### HARROWGATE SPRINGS.

At Harrowgate we stopped a short time to taste the bit-

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procure a license, and hunting implements. Then, after laying in a stock of provisions for the day,—enough to last him a week, and procuring a little urchin with a bag to bring home all he might kill, off he started, followed by the old house dog, in pursuit of game.

“He of course sought out the most retired places about London, naturally concluding those the most likely to furnish sport; and espying some yew trees at a distance,—a certain indication, time out of mind, of a church yard and burial ground, he very sagely thought that this was the most likely place to find the object of his search.

“Away then he hies, carefully examining, in his approach to the silent spot, every tree and bush. At length he discovered, sitting on the limb of one of the yews, a bird of uncommon size and appearance—such an one as in the limited range of his knowledge of the science of ornithology he had never before seen. There was no time, however, to be lost, and he crept up carefully on his hands and knees under cover of the church yard wall, cautioning the boy to keep the dog Towser behind, for fear of frightening the game. When he got near enough, he raised himself on his knees, rested his gun on the wall, took deliberate aim, shut both eyes, and pulled the trigger. Off went the gun, and down came the bird. He dropped his gun, sprang over the wall, and ran to seize the first fruits of his sportsmanship. But how shall I describe the scene that followed! On viewing a bird seemingly all head and wings extended before him, he turned pale, his limbs shook, his teeth chattered, and his whole frame became convulsed with terror. Gracious heaven, he faintly uttered, forgive me! What have I done? What will become of me? I have shot, oh! I have killed a cherubim!—It was an owl! which being as it were all head and wings, and so near a church, he took it for granted was a cherubim, which you know are always represented by heads and wings, and without bodies.”



ter waters of the springs. Only invalids assemble here to drink these waters, as their flavor is really too fetid and disagreeable to the palate to be tolerated by the votaries of mere fashion. The perfume of stale bilge water and of stagnant city docks resembles the fragrant odors of these healing springs.

#### RIPON CATHEDRAL.

Even the small village of Ripon has its stately Gothic Cathedral. Here, on the Sabbath, I once attended the performance of the Church services. It requires some little time to hunt out a congregation of a thousand persons in one of these great cathedrals, withdrawn as they always are to one small wing, fenced off from the main body of the building by a screen of wooden pannels, and closed doors. In this retired portion of the edifice are the pews and the pulpit; but in the spacious area of the central part of the cathedral the floor of flagging stones is clear of every fixture. The timbers of the roof of this edifice are all exposed to view, from the pavement of the floor, without lathing or plastering to hide the complicated framed work of braces and beams, conjoined with geometrical skill. The dim light admitted through the small panes of the leaded windows, composed here partly of stained glass, and the spacious dimensions of one of these earthly temples, never fail, however often seen, of producing in the mind sensations well calculated to prepare it for the worship of "Him who dwells in temples not made with hands." After the services were concluded, the old sexton showed us beneath the cathedral a remarkable repository of bones piled up with great regularity;—in the same manner, he observed to us, as the bones in the catacombs of Paris. Thousands of clean white skulls are packed in regular tiers one above another,

with alleys between the solidly arranged piles, presenting a wall of human bones ten feet high on either hand, and several yards in breadth. Upon the front of these walls the skulls, with thigh bones crossed beneath them, refresh your bewildered gaze with the spectacle of a garniture of death-heads and cross bones; whilst other smaller bones are fancifully arranged to form festoons and other figures, somewhat in the ornamental style of the display of swords, pistols, and muskets, in an armory. These bones are gathered from the adjacent church-yard to make room for later inhumations, that there may be no useless waste of ground, and in this cellar or vault are packed away promiscuously, without distinction of names or of relationship. Enemies and friends are here literally mingled together in the dust. A view of these remnants of the frames of thousands of human beings, by the aid of the feeble light admitted through the iron gratings of the narrow windows, must always produce a humiliating sense of the transient existence of man, more impressive than that caused by the most eloquent homily illustrative of his destiny, that to dust he must return. From the contemplation of these perishing wrecks of the organic mechanism of man, one is naturally led to think of the intelligence that once sparkled with animation in the sockets now void of moving orbs. Upon the wonderful separation of the mind from the body, every one must in turn pause, as philosophers and warriors and poets have often paused in vain before, for want of ability to comprehend how the silver cord is united and severed. This fruitless enquiry extorted a sigh from Buonaparte on the rock of St. Helena, and from a poet who asks,

“ When coldness wraps the suffering clay,  
Ah, whither strays the immortal mind?  
It cannot die, it cannot stay,  
But leaves the darkened dust behind.”

This knowledge, in the words of the Psalmist, is too wonderful and excellent for us ; we cannot attain unto it.— From the piles of bones various specimens of such as have been broken and reunited by the healing process have been selected. The junction of the broken part is discernible from the enlarged deposite of osseous mater, and appears stronger than the original bone.

#### ENGLISH PARKS AND PLEASURE GROUNDS.

At an early hour in the morning, we took a post chaise to convey us to the beautiful parks and ornamented pleasure grounds of Studley Royal, and to the ruins of Fountains Abbey, which are situated in a sequestered valley that forms a part of the domains of Studley Royal. These wide lands, as well as the ruins of the Abbey itself, are the property of an elderly maiden lady, Miss Ann Lawrence, or rather Mrs. Ann Lawrence,—maiden ladies who have passed the middle age being usually addressed by the prenomens of Mrs. as more proper and respectful than the juvenile term of “ Miss,” when applied to a grave and venerable maiden of nearly three score.

Besides these extensive tracts of many hundreds of acres improved as pleasure grounds, this lady is proprietress of nearly the whole township of Ripon, containing a population of about 5000 inhabitants. She possesses in her own right more political power in Parliament than the town of Manchester with its 140,000 inhabitants. By her proprietary rights of soil and burgage tenures, she has control over the election of two members of Parliament returned for the borough of Ripon. It certainly cannot be said that the fair sex has no share in the government of England, whilst a single lady sends two Representatives to Parliament.

## PARK OF STUDLEY ROYAL.

On arriving at the entrance to the Park of Studley Royal, the spacious gate, over arched with hewn stone, was thrown open by the porter, who made his appearance from a small adjacent building or lodge. A well dressed servant advanced to the post chaise to offer his services to show the grounds, and to point out the most interesting scenery. It seems to be a prevalent and certainly a very pleasing custom, to admit strangers to view parks and pleasure grounds, and even the interior halls, of the splendid mansions with which England abounds. After purchasing fine paintings to decorate the walls of these English palaces, and laying out the beautiful walks and gardens around them, with the nicely trimmed hedges, and lawns "shaven by the scythe and levelled by the roller," the next wish of the proprietors seems to be to exhibit them; that the flowers they have planted may not blush unseen. One of the principal enjoyments which wealth usually affords, after the necessities of life are secured, is derived from the transitory respect or admiration, which it creates in the multitude for its possessor. This happens to be a propensity peculiarly favorable to promoting the enjoyments of persons in humble circumstances of fortune, who are thus allowed to participate in a portion of the gratifications afforded by the fine pictures and ornamental pleasure grounds of the rich, even without the trouble of keeping them in order. The traveller has reason to offer his acknowledgments for these exhibitions, as the poor Chinese did to the Mandarin, after he had looked as long as he wished at the pearls with which he had invested himself to excite admiration.

Leaving our post chaise at the gate, we commenced on foot the tour of these celebrated grounds, accompanied by our guide. There appears first a long avenue, stretching for a mile or more in a straight line, shaded by trees,



and terminated in distant perspective by a tall monument or obelisk of stone. Herds of deer are grazing quietly in the glades, or reclining beneath the shade of the trees. Advantage has been taken of the waters of a brook to form several cascades, and a little lake or pond. At one place you view this brook whitened into foaming waterfalls, and listen to the murmuring sounds produced by it; at another place, as you proceed, you behold its tranquil surface spread out into an artificial lake, studded with green islets, and reflecting the inverted images of the trees, statues, and temples that adorn its borders. Several swans appear sailing in stately pride, gliding along the banks and among the islets, and contrasting their pure white plumage with the green leaves and herbage of the shores. The poetical lines from the "Homes of England" appear to have been sketched from scenery like this, which is in truth the pride of English country residences.

"The Stately Homes of England,

How beautiful they stand!

Amidst their tall ancestral trees

O'er all the pleasant land.

The deer across their greensward bound

Through shade and sunny gleam,

And the swan glides past them with the sound

Of some rejoicing stream."

To give variety and effect to the views of the scenery, a small building of hewn stone, erected after the model of a Grecian temple, with its portico and pillars also formed of blocks of hewn stone, displays its chaste proportions on the shore, its white outlines being conspicuous, like those of the swans, relieved by the deep surrounding verdure. To construct a stone temple like this, an expense must have been incurred, (if it may be permitted on this classic ground to count the cost of structures merely ornamental) that would have completed a small country church.

The artificial sheets of water are formed by means of

embankments thrown across the stream of the brook, or river, as it is here termed ; and the islets are made by heaping up large mounds of earth, excavated from the flat meadows overflowed by the waters of the brook, which are caused by a dam to spread over the low ground, and to gather around these great mounds, the base of each of which is submerged, the tops continuing above the surface. In one place the guide invites you to stop to allow him time to descant on the real or imagined beauties of the prospect. He speaks his part as usual, like a school boy, by rote, in a monotonous tone of voice. He will point out and describe in the glowing words, but passionless accents of an amateur, the elegant appearance of hanging woods, which you will find, when you look in the direction in which he points, to be the wooded declivity of some hill side, where the leafy tops of the trees rise successively one behind another, and apparently aspire above or overhang each other—a description of scenery rare in England, and rapturously admired. He points out the graceful statues, picturesque views of distant church spires, seen above the opening glades of trees ; or he solicits you to bestow a glance at the ornamental edifices placed with studied effect in various positions beneath their shade. In his zeal to do ample justice to the various beauties of the domains, the guide is disposed not only to point them out, but to give their history. Finding that he dated one of his stories above a century back, neither my time nor my patience would hold out till the termination of his recitals, and I hurried him onward. In advancing, he desires you to notice the clean well gravelled walks, winding beneath venerable oaks ; here opening upon a lawn, with a surface almost as smooth as that of the waveless waters of the adjacent lake, and there passing through beds of gay flowers. In one place the path winds up an abrupt ascent to the top of a bluff, through a sort of tunnel or

subterraneous passage cut with great labor through a precipice of solid rocks. Exploring the way along the dark cavernous passage, you suddenly emerge to the light at the top of the rocky cliff, from whence all these domains appear at one view, spread out below your feet with an effect greatly heightened by the sudden transition from the darkness of the passage. Similar scenes of fairy land may sometimes bless the dreamer in the visions of the night.\*

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\*The luxurious ease and elaborate enjoyments, resulting from the high state of cultivation and improvement in this anciently settled country, form a remarkable contrast with the struggles and privations encountered by those who first apply the axe to primeval forests, and open the way for the march of civilization and refinement. None but those who have witnessed the first step and the apparently last one of this march of improvement, from the first clearing of the wilderness, to the conversion of it into a sort of artificial paradise, can realize this contrast. Here all is calculated for pleasure; whilst in the newly settled country, scarcely the necessities of life are attainable, and severe privations and self denials are rendered tolerable only by the hope of future prosperity and relief. These difficulties I once had an opportunity of observing, during an excursion to a frontier settlement in the United States. It requires a firm heart for a solitary individual to enter the wilderness alone, for the purpose of encountering the arduous enterprise of clearing up new lands. With a wallet thrown over his shoulder and a keen axe in his hand, the new settler penetrates many miles distant from any human habitation, beneath the twilight gloom of one unbroken canopy of foliage. Relying on the vigor of his own arm to regain the cheerful sunshine, he applies his axe with persevering strokes, and every hour witnesses the fall and crash of sturdy trees which have been undisturbedly rooted to the spot for centuries. Acre after acre of fertile land becomes strewn with trunks and branches, closely intermingled. For the first time, perhaps since the creation of the world, the light of day shines with unbroken ray upon that spot of earth. When the leaves become dry, fire is applied to the fallen trees, and all the small branches are consumed, leaving the huge blackened trunks scattered about the field, smoking and smouldering, half consumed. These trunks are afterwards rolled together, to form great heaps with the fragments of the unconsumed branches. The remorseless fire is again kindled, and after it subsides, nought remains of a noble tract of forest but scattered heaps of white ashes. From the summit of some commanding hill, the smoke of a score of burnings, as they are termed, may be sometimes seen rising slowly to heaven like masses of vapory clouds.

The solitude of the groves in the pleasure grounds of Studley Royal is enlivened by the singing of birds, which here according to the statement of the guide find protection from the guns of sportsmen. The shrill cry of the peacock is also heard, attracting your attention towards

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They issue from amid the tree-tops of the silent forests, as from altars erected to the genius of civilization. At the close of day, the falling dews bring back the sooty particles to the earth. Suffocating odors and smoke, mingled in darkness, settle over whole valleys, shrouding them in mists as impenetrable to the eye as the fogs of the ocean.

The log house is next constructed from the straightest trunks of trees, that have been selected, and preserved from the fire. Into his humble dwelling the pioneer, now become master of the soil which he has subdued with his own hands, may perhaps be prepared to introduce with proud feelings of independence a youthful bride, who literally deserts the world for him and with him. Sole partner of his fireside, she spreads the frugal fare upon the table, formed of a broad flake of bark peeled from a tree, and unrolled, and fixed expanded, with its sappy surface already smoother than the hand of the mechanic could make it. Upon this quickly made table the Indian cake—the first product raised in their fields without the aid of the plough, amid the stumps, or girdled trees, is daily spread, with the ever accompanying dish of salt pork or bacon. To procure even this scanty fare is at first sometimes a work of difficulty, for want of mills to reduce the flinty kernels to meal. Where no mill is located within an accessible distance, recourse is had to pounding the corn in a mortar. For this purpose, a sapling is sometimes bent over the forked limb of an adjacent tree, and a heavy pestle is hung upon the end of it to descend in its vibrations into a cavity scooped out of a stump, forming a mortar of sufficient capacity to receive a few quarts of the grain. The pliable top of the sapling, bowed over and extended horizontally, affords an elastic spring to lift the pestle, in aid of him, who is here compelled to become his own farmer and miller. With scarcely less labor is the corn carried several miles to the nearest mill, across deep streams, with no other passways than a fallen tree or a slight foot bridge, and over roads almost too rugged for horses to travel. The new settler may at first be compelled to go to the mill on foot through the trackless forests with his bag of corn on his shoulders, and to return with it in the same manner after it has been ground into meal.

At the approach of winter a few sheets of oiled paper secures the casement against the admission of the keen air and drifting snows, although the numerous crevices left in the roof may seem to render this precaution useless. Maternal love has soon to spread additional beds for the offspring,



his glittering feathers, whilst he moves about rustling and parading them over the greensward with ostentatious display.

The extent of this kind of ornamental scenery, and of the continual expense necessary to preserve it all in order, may be estimated from the following detailed account of this single estate. The park for the range of deer includes four hundred acres of land, and the pleasure grounds two hundred and forty acres more. It was also stated to me that fifteen men are employed during the spring and summer to mow repeatedly, or rather to shave with a scythe the lawns, that not an aspiring blade of grass may be suf-

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who in the bosom of the solitary forests are not regarded, as they sometimes are in luxurious cities, in the light of unwelcome intruders destined to become a tax upon their parents. Here an infant is hailed at its birth by the solitary couple, as Eve was by Adam in the garden,—as a companion sent by heaven to relieve the solitude of the woods, and to assist in converting the wilderness into fruitful fields.

Increasing wealth in cattle and in improved lands, in barns and store-houses, gradually accumulates around the now comfortably lodged settler. Here are passed the first years of many a lonely boy and maiden, rendered happy by possessing as their first play things the little square blocks, the remnants of the hewed logs cut off in constructing the first log house. These serve both for stools and tables, whilst they are assembled in a family circle during a winter evening around a crackling fire. By the side of the fire-place, stands the huge crane, like a tavern sign-post, with an arm stretched out stiffly at right angles to suspend the kettles over the blaze. The crane is formed of a stout post erected to turn upon a pivot, the horizontal arm of which in its sweeping circuit rakes nearly the whole range of the kitchen. On the rare approach of a stranger as a guest, the kindling fuel is quickly fanned into a flame by the flirtations of a matronly apron, instead of the more scientific mechanism of the bellows. At the same time I have seen a nursling essaying to aid its mother by lifting its light drapery and courtesying on the hearth before the smoking brands. The stranger is always met by the ever faithful porter, the watch dog, who boldly makes himself acquainted by smelling at the knees of the visitor, and by following him at every step towards the threshold in uncomfortable proximity with his heels.

When the neighborhood becomes occupied by other families of settlers, a storekeeper makes his appearance, and the baker's cart, freighted with

ferred to rise conspicuously above the truly velvet surface. Laborers are to be seen engaged in rolling the gravel walks, weeding the flower gardens, and improving still further the natural beauties of the place by additional works of ornament. Our conductor observed that it was the pride and delight of his mistress to make improvements, and to *keep in repair* the ruins of Fountains Abbey.— This term may not prove very intelligible to those who are accustomed to viewing only the buildings constructed of the almost imperishable materials of marble and granite. It may be here observed, by way of explanation, that the sand-stone employed in the construction of Abbeys, cathedrals, and castles, in England, is a perishable material, which when exposed to the action of storms and frosts becomes disintegrated, particle by particle, and resolved into its constituent parts, loose sand, to be drifted about by the winds. Repairs of the exterior walls of buildings constructed of this material become therefore necessary after the lapse of time, and in the course of ages all these old ruins, interesting as they are, will be wasted away into particles of dust, and become the sport of the winds. Three thousand years have scarcely effaced the chisel-marks from the hard granite of the Egyptian ruins, and from the fine mar-

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crackers and gingerbread, performs an occasional journey into the district. One of these bakers with his travelling cart I knew to make a regular tour of sixty or eighty miles, to supply his most distant customers ; and I once heard him bitterly complaining of a rival baker, who had then lately interfered with his business by establishing a bakehouse within the unreasonably short distance of only twenty-four miles of him !

The spirit of rivalry in trade extends, and competitors in various kinds of business assemble and form together a small village. The sons, imitating the example of the father, having learnt to apply the axe to the trees around them until the forests have disappeared, become restless, and sigh, like Alexander, for other new forests to conquer. Gardens, artificial ponds, pleasure grounds, and splendid structures may in after times adorn the cultivated landscape, when the labors and privations of these pioneers are forgotten.

ble of the temples of Palmyra and of Greece ; but before a similar period shall have elapsed, a mound of sand with fragments of stones and mortar may probably be all that will survive the wreck, to indicate the spot, on which many of these English castles and Abbeys once stood.— These ruins may be long preserved by means of these partial repairs, which may finally become nearly as thorough as those affirmed of the Yankee's ship, of which nothing of the original work was left but an augur hole.

Her ladyship and old Time have thus a constant struggle for mastery about the ruins of the Abbey ; for when with his corroding tooth he gnaws away one stone, she is ready to replace another precisely like it ; and when he splits open a new rent in the walls, she shuts it up again. If the contest were to be carried on in the spirit of chivalry, and time would gallantly forbear laying his finger on the person of the lady to silver the locks of the temples, and to dim the sparkling lustre of the eye, the contest might be continued as long as the neighboring quarries should endure. But alas ! hopeless is the struggle with a ruthless adversary who spares not even the very monuments of those who fall before him. At all events, the possessor of these agreeable retreats can have no reason to complain of her lot, for if any where the foot of Time falls noiseless, as the poet alledges, it may be supposed to be here, at this vernal season, where amidst blossoms and fragrance it can “ only tread on flowers.”

#### RUINS OF FOUNTAINS ABBEY.

Following the path by the brook, which we had before seen flowing through the garden already described, we came at once in full view of the stupendous ruins of Fountains Abbey, considered the most perfect of any of the monastic ruins in England. On approaching them, you

see long ranges of high walls, with summits broken and ragged from the gaps left by fallen fragments, and with breaches made in them by slow decay. Tall towers with shattered battlements still lift their fronts to the height of one hundred and sixty feet. These ruins are situated in a retired valley, with no habitable house near them to break the spell of gloom and desolation, by contrasting the cheerful view of renewed fabrics of the present race of men, with those corroded by time, and covered with moss, which were erected by men of former ages. This Abbey, in the days of its prosperity, contained nearly 1000 persons, and its very ruins, rising in solitary grandeur above the trees and bushes which have closed around them, cover more than nine acres of the low meadow land. The sun now shines as brightly upon the green turf within the circuit of the roofless walls, as upon the adjoining meadows, throwing the shadows of broken arches across the area once covered by the floors. Whilst you walk beneath some of the lofty arches, the loosened stones, feebly united high above your head, and sweeping over in bold spans from buttress to buttress, seem to be every moment ready to fall, and destroy any one passing beneath them. You look up at these apparently tottering stones with an excited and fearful interest, and hurry forward lest the mouldering touch of time at the very instant may have crumbled the key stone which sustains on a balance the ponderous masses of masonry. The cloisters, where the monks walked in stormy weather, are still entire, affording even now a darkened and refreshing shade at mid-day under the long succession of vaults, which resemble the stone roof of a cavern extending 300 feet in a straight line.—The thick damp walls on either hand, and the row of stone columns along the centre, which sustain the stone roof, give to this cloister the chilling aspect of a vast long dun-



geon, in which a twilight shade always prevails, bringing to the recollection the description of the poet.

“ In these dark solitudes and awful cells

Where heavenly pensive contemplation dwells.”

On proceeding still farther to the apartments of the kitchen, most convincing proof was exhibited that all the time of the monks, who once traversed these cloisters, was not absorbed by “ heavenly contemplation.” Two of the fire places remain entire, which are each fifteen feet in length and six feet in depth. Upon these hearths when loaded with wood, the flames must have resembled those of a conflagration, and a whole hecatomb from a well stored larder might have at once been prepared for the table.— The dinner-halls or refectories are of dimensions corresponding with those of the kitchen fire places. Indeed, after the vast wealth acquired by these monks had introduced corruptions and dissolute habits, all the ancient records of their lives furnish statements of feasting and licentious pleasures, instead of penances and mortification.— The following letter, copied from the historical account of this Abbey, was written, as it is stated, by one of the visitors appointed by Henry VIII. to inspect the affairs of the monasteries previously to the suppression of them.— In order to answer the views of his royal master, the writer probably gives a highly colored statement of the corruption of manners that prevailed within these walls.

“ Please your worship to understand, that the Abbot of Fountayns has greatly dilapidated his house, wasted ye woods, notoriously kept six whores, and some days before our coming he committed theft and sacrilege, confessing the same. For at midnight he caused the chapleyn to stele the keys of the sexton, and took out a jewel, a cross of gold with stones, one Warren, a goldsmith with him. And there they stole out a great emerode with a rubye, the said Warren makein the Abbot believe the rubye was

a garnet ; and so for that he paid nothing, for the emerode but £20. He sold him also plate without weight or ounces.

Subscribed,

Your faithful servant

R. LAYTON."

A heap of the bones of these Abbots is shown. They were found inclosed in stone coffins on removing the ground beneath a part of the chapel. Over these bones, might with truth be inscribed Jeremy Taylor's moral sentiment, probably called forth on witnessing some similar scene—" I that wore a mitre, am now a little heap of dust."

These monks, on the first establishment of the order, retired from the bustle of cities to solitary places for the ostensible purpose of avoiding the temptations of the world, and of leading each a life of abstinence and cheerless privations, "in hope to merit heaven by making earth a hell." The really severe discipline of the early founders of this order of religionists attracted public sympathy in a superstitious age ; and donations in lands were made to sustain the enthusiastic devotees, who soon became collected together into small companies, and built Abbeys. Rich endowments were continually bestowed by those, who in the unguarded, agonising moments, which close a mispent life, were led to believe that by thus exchanging the lands they could no longer enjoy in this world, they should purchase peace with an offended God, and receive more than an equivalent in the never ending joys of heaven. It was soon found, that after fair acres were added to already widely extended domains, that these sublunary possessions brought the cares of the world with them even to the monk in sackcloth ; and the once solitary secluded valley became necessarily the mart of traffic for rents and commutations between hard laboring men, who tilled the soil, and the wealthy devotees who owned it. Devotion to heaven and the calculations of sordid avarice and of world-

ly gains, for a time maintained divided possession of their breasts ; but riches finally effected the destruction of those whom poverty had strengthened, and privations had rendered prosperous. The luxuries of the table, and the fair tenants of their farms finally overpowered the sense of the devotion due to Him for whose peculiar service they had renounced the world. That world with all its allurements became so much the object of their pursuits, and their corruptions became at last so palpable, that the hand of kingly power, or of reform as it was then termed, was extended to correct the licentious abuses existing in the monasteries. Their vast possessions served to stimulate the cupidity of those, who, in the progress of this work of reform, were to obtain the privilege of making the advantageous experiment of a better management of portions of the Abbey domains in the form of individual property. Thus was built up Fountains Abbey, and thus has it become a desolate place, where the foxes may climb over the ruins and look out of the windows.

Fountains Abbey was erected about five hundred years ago, and flourished nearly 300 years, until with the other monasteries in England it was suppressed by Henry VIII. To compensate for his numerous vices, this tyrannical king thus did some good to the country which he governed. Favorable, indeed, to the liberty and happiness of the common people of England has been the overthrow of the intolerable power of these ecclesiastics, on the one hand, by Henry the Eighth, and that of the no less intolerable power of the feudal lords by Cromwell on the other. The former were their spiritual, as the latter were their temporal masters. For the former, the common people were made instrumental in building these immense Abbeys ; and for the latter, the vast castles, which, even to this late day, in the humbled form of ruins, continue to attract many a traveller from his path, to wonder at their

stupendous magnitude, as he silently steps amid the fragments of prostrate columns and arches.

Although the present generation of men may leave behind them few of these great structures to form ruins for generations in future times to muse over ; yet they will leave to posterity what is far better—well built cities, and the example of increased human comforts. In modern times, the labor of the common people has been employed in erecting spacious private houses, and in procuring a greater share of the comforts of life to crown the enjoyments of their own firesides, rather than in increasing the pomp and luxury of the halls of feudal lords and monks. Well may the contemplative spectator from America exclaim over them, Oh ! what thanks are due to the Pilgrim Forefathers for the legacy of religious and political freedom which they have bequeathed to their posterity in the western world.

Whatever burthen still remains in England of this ecclesiastical taxation, it now falls principally upon the middling classes of landholders. The tithes and poor rates assessed upon them absorb no inconsiderable portion of the income of their landed estates.

#### JOURNEY TO YORK—AGRICULTURAL IMPROVEMENTS.

After strolling among the ruins of the Abbey for a short time, we returned to Ripon, and took seats in the coach for York. The face of the country over which we travelled between these two places is gently undulating, and highly improved by cultivation. The wheat as well as the peas and beans, was planted in hills, or regular rows, in some of the fields, and laborers were at work hoeing both the wheat and the other crops, to keep them free of weeds. This is a degree of nice cultivation which the agriculture of the United States will not probably soon re-



quire, such is abundance of new and fertile lands to be had there on moderate terms. Probably very little wheat is tilled by the hoe even in England. It was stated to me that the system of drill husbandry had of late been applied to the cultivation of most of the field crops. Immense quantities of a small sort of gray beans are raised in England for the use of horses, as a substitute for the Indian corn so generally produced in the United States. Although in the rotation of crops, these beans form so very important a culture here, yet I have rarely seen a field planted with them in the United States.

An American friend, during a short excursion on horseback, stopped at an English inn, and was accosted by the landlord with the inquiry, "if he would have some corn and beans for his horse." This term is applied to designate a favorite national dish in the United States, forming a savory article of food served up on the table, instead of the manger. Here the term *corn* means any sort of small grain, such as oats, barley, rye, or wheat; and the beans are the coarse unpalatable agricultural product used almost exclusively for the food of horses. Although the Yankees of New-England and the horses of Old-England may both be fond of corn and beans, yet they do not in reality so nearly coincide in their tastes for an article of diet as Dr. Johnson alledged of his fellow-countrymen, the Scotch, when he defined oats to mean "food for horses in England and for men in Scotland." An invitation to a treat of beans and corn, my friend observed, appeared to him rather as proffered personally to promote the creature comforts of the rider than of his horse. The corn alluded to in the United States, when mentioned in connexion with beans, is the *Zea Maiz*, or Indian corn, cut in the milk, boiled, shrivelled by exposure to the heat of the sun, and mingled in due proportions with the small white bean, instead of the oats and horse bean here appropriated as food for this animal.

A heavy roller is very generally employed early in the spring upon the fields of sprouting grain, to crush the hard lumps of earth, and to press down the soil over the fine roots.

According to the statement of a Yorkshire farmer, the average price of wages of farmers' servants, as the hired laborers are here called, is thirteen or fourteen pounds for twelve months, (nearly  $5\frac{1}{4}$  dollars a month.) The wages of a servant-maid are about six pounds per annum, or about half a dollar a week. The labor of the hired man is available to the farmer during nearly the whole year—an advantage which the less intense frosts of an English winter afford to the farmers. During the deep snows of the winters in the northern section of the United States, little labor can be performed in the open air, except perhaps in cutting wood for fuel and clearing away forests.

The plantations of young forest trees are becoming so numerous and extensive, that it has been supposed there are more timber-trees now growing in England, than there were two or three hundred years ago, when wood was consumed for fuel, instead of coals, although the country was at that time comparatively very thinly peopled. In various parts of England, the parks and pleasure grounds of the nobility and rich commoners are frequently of such great extent as to embrace in their circuit several hundred acres of land, covered with fine oaks and other forest trees. The advice given by the Scotchman appears to be very commonly followed, to stick in trees, which will be growing while the proprietors are sleeping.

The farms in England are composed of much larger bodies of land than those commonly found in New-England, notwithstanding land is there much cheaper. The farm houses are at considerable distances asunder, and the cottages of the laborers are not so thickly strewn along the road side as might be expected in a country so populous

as England. Very large tracts of land are held by noblemen and other wealthy proprietors, whose steady income from the interest on their funded stocks, and from landed property, compounded and reinvested, sweeps together into vast estates the smaller proprietary rights. In a few hands much of the wealth of the country becomes thus accumulated; for there are not many sorts of regular trades in England, nor indeed elsewhere, which will yield a return of compound interest on a fixed capital, and at the same time give support to those who hire and employ it.

On travelling past these great estates in various parts of England, it has been frequently stated to me that the lands on each side of the road for one or more miles belonged to a single proprietor. By a happy provision of the statute laws of all of the United States, as has been before observed, lands, are equally divided, agreeably to the spirit of republican institutions, among the children, when the father dies intestate. However large may have been the tracts of wild lands originally held by the first purchasers, there are few instances in which they are not soon minutely subdivided. In three or four generations, the greatest estates become reduced, by continued subdivisions, to small proprietary rights. Here the laws of primogeniture give to the eldest son the greater part of the paternal estate, and serve to transmit for centuries these vast possessions, undiminished, in one family, or line of descent. Goldsmith's beautiful poem, the "Deserted Village," is founded upon the gradual extermination of the humble cottages of the small farmers, by means of these purchases and entailments: The sites of little villages are converted into parks for deer, and pleasure grounds and lakes and flower gardens; or perhaps into large farms of many hundred acres, managed by contractors. Although Englishmen are always found unwilling to admit the truth of the

sketch drawn by Goldsmith, yet, like most of the productions of that admirable poet, it is founded in so much truth and nature, as to obtain universal credit.

“ Along the lawn, where scattered hamlets rose,  
Unwieldy wealth and cumbrous pomp repose ;  
One only master grasps the whole domain,  
And half a tillage stints the smiling plain.

“ The man of wealth and pride  
Takes up a space that many poor supplied ;  
Space for his lake, his park’s extended bounds,  
Space for his horses, equipage and hounds ;  
His seat, where solitary sports are seen,  
Indignant spurns the cottage from the green.

The principal augmentation in the population of England has occurred in the manufacturing counties. The population of the agricultural counties has increased mainly from the employment of persons in the various sorts of manufactures, of late years introduced into them. It appears from English statistical accounts, that little increase of tillage has taken place in the last fifteen years, and that consequently there has been only a small increase in the demand for agricultural laborers. In the manufacturing districts of the kingdom, the surplus population spared, or thus driven from agriculture, has heretofore readily found employment ; as appears by the population returns made to parliament, which show an augmentation of nearly fifty per cent in the town of Manchester within the last ten years,—an increase, nearly as rapid as has taken place in the most prosperous districts of the United States. It is but little more than a century since the agricultural products of Ireland have been admitted into England. Since that period, the imports of wheat and cattle, and of the products of the dairy, have become very great, leaving potatoes as the residuary crop of that island for supplying the principal article of food to the poor Irishmen who till it. The agricultural villages of England, it is stated, have from that period increased slowly, the sur-



plus population being diverted to swell the numbers of those who resort to manufactures. Should the manufacturing districts, from any stagnation of trade, become also stationary in respect to population, and afford no further demand for laborers, then must ensue severe distress and afflicting poverty in every agricultural village of England; for there are here no new lands to fly to, and no unoccupied spot for the reception of every unemployed poor man, as is the case in the boundless regions of the United States. To encourage emigration to distant lands, will then probably be the plan adopted for disposing of an overflowing population.

In England, even the second and third rate poor lands are taken up and cultivated, and new capital is created by expensive agricultural improvements, by the construction of roads and canals, or by manufacturing industry. In the extensive uninhabited regions of the United States, the labor of a new settler only discloses the capital which the profuse bounties of a munificent Providence has provided, where almost "every acre will sustain its man."—Every stroke of the axe of the pioneer of the forests adds thrice the value of the mere labor to the intrinsic wealth of the country; for it uncovers to the sun a virgin soil, which, although nominally worth only a few cents per acre, may surpass in fertility the fields of the finest landed estates in England, valued at many pounds sterling per acre. Although the difference in the estimates of the relative value of lands in the two countries is so considerable, yet, for all practical purposes of supporting an independent yeomanry, the cheap new lands may be deemed comparatively equivalent, acre for acre, to the same number of fertile acres in England. The amount of capital, thus speedily acquired by the sturdy republicans of the new world, may be more readily imagined than calculated. Within the last half a century, the Valley of the Missis-

issippi was a mere wilderness of forests. Now, it is strewed with cities, improved by roads and canals, and richly provided with the arts of life. The difference between the ultimate result of the same amount of labor applied to manufactures in England and to clearing away forests in the newly settled territories of the United States, consists in the circumstance that manufacturing labor produces consumable articles, whilst the agricultural labor of clearing forests develops a fixed and permanent capital in land, which must remain to enrich the children of the laborer, after having first contributed by its products to sustain and educate them. Who can estimate the value of the lands watered by the tributary streams of the Mississippi, extending from near the tropic through a winding course of about 3000 miles toward the polar snows, and embracing a whole zone of climates in its extended limits? This value to the civilized world has been created as it were by magic, within the few years since the toil of freemen has been directed toward these new regions. It may be said with truth that the wealth of a nation already exists in the newly settled valley of the Mississippi. Aided by these natural advantages of unbounded capital in new and fertile lands, the wealth as well as the population of the United States must in the course of nature surpass those of the older countries, from whose comparatively contracted borders came the early Pilgrim settlers of the North-American colonies.

#### YORK.

On approaching the city of York, its ancient walls show their massy fronts in the intervals between the houses, which are gathered closely about them. The ruinous walls may be traced entirely around the original limits of the city. In several places, the battlements remain entire,

as well as the loop holes, from which the archers once discharged their pointed arrows. These defences, like all others in England, constructed before the invention of artillery, are capable of offering only a mere show of withstanding the arts of modern warfare. The great gates, surmounted by watch towers, remind one of the historical accounts of the civil wars between the houses of York and Lancaster. During the bitter warfare carried on between the inhabitants of two neighboring counties, whose party distinction was that of two roses, the red and the white, the heads of renowned warriors were cut off and placed as trophies over these gates, which were thus bedewed with blood deplorably shed in civil wars.

*York-minster.*—From the first moment the traveller arrives within sight of the mountain-like form of the great Cathedral, or York-minster, as it is called, which becomes perceptible at a distance of twenty miles, with its massy outlines high raised above the edge of the horizon, he feels impatient at the tardy progress of the coach, and even at the necessary delay in securing lodgings, and hurries forward to view the edifice—the pride of the city, and, according to an inscription on one of the pillars of its chancel, the pride of England also. The magnitude of the Cathedral of itself produces an imposing effect, the roof being nearly one hundred and fifty feet high, and the length of it above five hundred feet. For its length and extreme height, the building is narrow. Its narrowness, however, is not perceptible, as large wings project at right angles with the sides, of the same height as the main body of the building. This form has commonly been adopted in the construction of Gothic Cathedrals, giving to the ground plot the outlines of a great cross, emblematical, as some have supposed, of that upon which the great Author of the christian religion perished.

On viewing York cathedral near at hand, its vast magnitude is not so much regarded, as the numerous figures and devices sculptured and chiseled with astonishing prodigality of labor on the exterior surface of the walls, upon which the eye rests in detail with a scrutinizing curiosity. Instead of standing at a proper distance to take a position to command a full view of the symmetrical architectural proportions of the whole front, as the spectator does who calmly enjoys the graceful outlines of structures formed after the Grecian orders of architecture, one here finds himself amused and beguiled by gazing with wonder at the grotesque figures of the numerous sculptured animals, some of which resemble devils petrified, or "hydras dire." The water is discharged from the eve-troughs through the gaping mouths of men and beasts, which project horizontally, with the full half of their figures extended from the face of the walls, as if careful to spout out the streams as far as possible from the foundations. Upon the mouldings and raised protuberances cut with the chisel upon the face of the walls, (or fretted as it is termed) you continue to look, admiring the patient toil of the workman, thus minutely displayed in petty ornaments, rather than the grand proportions of the edifice itself. The Gothic architecture, indeed, seems to seek, by superfluity of carved decorations and reliefs, to divert the mind from passing judgment on the real merits of its external proportions. The Grecian orders of architecture, on the contrary, lift their simple fronts in a more chaste style, as if to invite the most severe scrutiny of their faultless proportions, designedly modeled to combine beauty with utility. On the principal front walls of this cathedral, above the great doors, are corbells, or projecting carved pedestals, on which stand numerous statues, formed of the same kind of soft cream colored free-stone



as that of which the walls of the building are composed. Time has dealt unsparingly with these stone images, having in some instances worn away the exposed noses of "the human face divine," as well as the snouts of Monkeys, leaving the features of each furrowed like a honeycomb, and hardly distinguishable. To execute all this work of the stone cutter's art, requires such great expense, that in the modern Gothic churches constructed in England greater simplicity has been studied. It required all the devices of the ancient Roman Catholic priesthood, to provide funds to be lavished on these overloaded ornaments. Whole provinces were exhausted by contributions to furnish the means of building a single Cathedral.—York-minster cost, it is stated, above two millions of dollars—a sum sufficiently ample to build up a modern town with comfortable dwellings for several thousand inhabitants.

During those dark ages, as they were justly called, the clergy alone possessed the important secrets of reading and writing; and when one of the common people was found sufficiently accomplished to write his name, in reverence of his scientific acquirements he was absolved from capital punishments for many crimes, or obtained the "benefit of clergy," as it was termed. The clergy became the most important class of society, for the drafting of all written instruments, including wills, devolved upon them. Thus having access to the bed side of the sick, at their last moments, they exercised, as all accounts agree in stating, every art and influence to prevail on them to bequeath their estates to endow the churches and monasteries with which they were connected. "Redeem your souls from destruction," once exclaimed St. Egidius, bishop of Noyou, "while you have the means in your power. Offer presents and tythes to churchmen: humbly implore the patronage of Saints, for if you observe these things, you may come with secu-

rity to the tribunal of the eternal Judge, and say, Give us, O Lord, for we have given unto thee.”\*

The following are the dimensions of this magnificent Cathedral, as extracted from a published statement.

Length from East to West	524½ feet
Breadth of the East end	105 “
Do. “ West end	109 “
Width from North to South, including the wings	} 222 “
Height of the lantern tower	235 “

It is on entering the door of the Cathedral that one becomes sensible at once of the impressive effect of the Gothic architecture in all its magnificence. You feel overpowered and reduced comparatively to a pigmy size, as you humbly move over the stone pavement of the floor, and look upward at the imposingly lofty arches over your head, upheld, at the height of a hundred feet, by tall slender columns formed like bundles of reeds. The arches at the intersection of the cross, called the transept, are 170 feet above the floor, leaving the space open to the gaze of the upraised eye. The appearance of the stained glass windows, one of which is seventy feet high, may be very perfectly represented, as has been frequently observed, by the bright tints which stream through the tube of the philosophical toy called the kaleidoscope. The pieces of colored glass are, however, so arranged in the leaded compartments of the windows, as to form figures of the apostles, with crimson and purple garments, and various other brilliant tints, united in the broad area of the Gothic windows like a sort of Mosaic work.

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\*To prevent every influence of this sort over the terrified, or weakened mind of the dying man, a proposition was once brought forward in the Legislature of Massachusetts, declaring all bequests to religious uses, null and void, unless the proper instruments of conveyance should be made at a certain period of time before the death of the testator or benefactor.

Upon inspecting the capitals of the columns in the interior of the Cathedral, the same minute, barbarous figures, characteristic throughout of the Gothic architecture, appear contorted into all sorts of attitudes, and distract the attention from the nobler beauties of this airy style of architecture. Cats, birds, monkeys, and harpies, are carved in half raised figures, or demi-relief, as it is termed, all of them busy at their antic capers, exhibiting in some instances attitudes not the most delicate, and particularly unbecoming the sacredness of a church. According to the poet's description, however, these may be all in character.

“The corbels were carved grotesque and grim;  
And the pillars with clustered shafts so trim,  
With base and with capital flourished around,  
Seemed bundles of lances which garlands had bound.”

Only one poor wing of this vast pile is provided with pews or seats, and used for the worship of Him to whose service and honor the whole is nominally consecrated.—The entire area, excepting the small wing occupied by the pews, is kept clear of every fixture which might intercept the view of the richly sculptured architecture of the most imposing portions of the edifice. One is thus insensibly led to the conclusion that this proud Cathedral is preserved rather as a monument of human pride than of human piety. A partition or screen so completely conceals the part used for religious services, that I was sometimes surprised by a sudden burst of music from an unseen choir of singers, whose voices, united with the swelling notes of the organ, were reverberated in peals of repeated and gradually expiring echoes, literally as described by Gray.

“Through the long drawn aisles and fretted vaults  
The pealing anthem swells the note of praise.”

The great musical Festivals, as they are called, are held within this Cathedral, where the effect of harmoni-

ous sounds must be truly delightful. At one of these musical exhibitions, it is stated, 5000 persons were present, and the sum collected by the sale of tickets during the three days of the performances, exceeded 70,000 dollars.

York contains about 25,000 inhabitants. The streets are narrow and the houses are ancient. Throughout the city reign that calmness and quiet, which are the usual presages of decline. The suppression of the monasteries by Henry VIII. was a heavy blow to the prosperity of this place, as a large proportion of the population were once connected with those institutions, and were supported by the vast sums collected, in various ways, by the religious orders, and expended here. In York are also to be seen the shattered walls of an Abbey, which are now nearly levelled with the ground.

### *Journey from York to Sheffield.*

The road from York to Sheffield conducts you through Wakefield. The traveller here almost instinctively looks at the first Church he passes, as having been the scene of the good old Vicar's pastoral labors. Near Wakefield are some thrifty apple orchards, which are rarely seen in the northerly parts of England, this kind of fruit being ripened better in the warmer southern counties. The New-York apples are well known in England, and are held in high estimation for their spicy flavor. They are distributed by the canals from Liverpool, as an article of commerce throughout the interior, and for the dessert are thought to rival the golden fruit from the West Indies.

On the brow of a hill, in a conspicuous situation, we passed extensive ruins, apparently those of an old castle, with broken battlements and towers. Upon enquiring of a fellow-passenger, the ruins proved to be of modern construction, having been lately *built* at a considerable ex-



pense, merely for effect in heightening the beauties of natural scenery in a gentleman's grounds.

Lofty pyramids and pillars of stones are frequently visible from the road. These landmarks are erected upon the distant hill tops, by proprietors of large estates, for the sake of presenting conspicuous objects to terminate the perspective views through the vista of long avenues of trees, or to adorn favorite prospects; or sometimes to designate, with seignorial pride, the far distant bounds of landed estates; which, in this vicinity, are in some instances so extensive as almost to inclose "the cattle on a thousand hills." It was to the effect produced by these tall stone monumental structures, seen at the end of a long avenue of trees, that the line of Goldsmith alludes.

"Their vistas strike, their palaces surprise."

On approaching one of the vallies near Sheffield, an iron foundry appeared—shooting up the ever flickering blaze from its chimney, being the first signal that we were entering upon the land of iron and coal. Connected with the furnaces, as usual, are iron rail ways for the transportation of the iron stone, and fuel to smelt it. Several flax mills are also passed, in which the flax is spun by machinery. The products of the mills, spread out to be bleached, invest the adjacent fields with a covering which resembles patches of unmelted snow left from the drifts of winter on the green herbage of the fields.

#### SHEFFIELD.

Sheffield, with a population of about 65,000 persons, is the rival of Birmingham in the manufactures of iron. It affords much gratification to a stranger to view the various processes in the manufacture of cutlery, whereby in some cases, a bar of rough iron, brought here from Sweden, is wrought, by the skilful labor of the artists, into articles

more valuable than a bar of silver of the same weight.—My first visit was to the extensive works for converting iron into cast steel, belonging to Messrs. Naylor & Sanderson. Their brands are well known to the machinists of the United States, as indicating the best qualities of cast steel sent from England. About seven thousand pounds of this metal have been made here in one day. The coal used for the works is of a selected quality ; in some of the lumps of which the charred particles of the fibres of wood appeared distinctly visible, exactly resembling those perceptible in common charcoal.

The first process in making the cast steel is to arrange bars of Swedish iron in a long narrow brick box or oven, about two and a half feet wide and three feet deep, and of a length sufficient to receive the longest bars. Between each layer of iron bars, powdered charcoal is sifted, and the top of this box is covered with a layer of clay nearly five inches thick, to exclude the air and prevent the powdered charcoal from being consumed by the heat, which is communicated to it through the lining of the brick work. This brick box is enclosed in a regular furnace, in such a manner that the intense heat of the flames may circulate around it and gradually heat the bars of iron, covered up by the charcoal, to an intense glow, for about the period of a week ; after which the whole is cooled. If the heat be not properly regulated during the process, the pile of iron bars, as I was told by one of the proprietors, becomes fused into a solid mass. The surface of the bars, after being withdrawn, is found to be covered with blisters, resembling air bubbles half bursting from the swollen surface of the metal, which becomes converted by the operation into steel. From the peculiar appearance of the blisters upon the bars, it is called “ blistered steel,” and sometimes “ steel of cementation,” from the process performed ; and also “ shear steel,” from the general use formerly made of

it in the manufacture of blades of shears. It was observed to me that no iron is made in England equal to that imported from Sweden for the purpose of being converted into steel.

To make cast steel, the bars of blistered steel are broken into small pieces, from which the imperfect portions are carefully excluded, and the remainder are put into crucibles about eighteen inches deep. Each crucible is set into a small furnace, about twelve or fourteen inches square, and two feet in depth. Many of these furnaces, each containing its crucible, are arranged side by side. About forty pounds of the fragments of the bars of steel are put into each one, and immediately covered up closely by a luting to exclude the air, until the metal becomes melted ; after which, it is poured out in a fluid state into moulds to form ingots. Hence, the name of cast steel is given to this new product. The ingots are subjected to the action of hammers and rollers, to reduce them into bars like wrought iron, in which state it is prepared for use.

In the preparation of the clay for making the crucibles, great care is required to detect all lumps of foreign substances, which might melt and allow the fluid steel to run out through the sides of the crucible into the fire, where it would be lost. To perfect this operation, a poor fellow was employed in treading out the cold wet clay with his bare feet, in a cellar as dark and damp as the vault of a dungeon. Owing to the sensibility of his naked feet, he is enabled to feel the least lump of foreign substance in the dough-like mass which he patiently treads upon, and kneads from morning to night. Forlorn appeared the condition of this man, who was engaged in this uncomfortable employment, with damp cellar walls around him, and with only a very moderate share of the light of heaven. He exhibited, however, no lack of cheerfulness, and contin-

ued to trudge around whilst I talked with him. When we find with how few external comforts one man appears as happy as another, possessing all the luxuries of life, and commonly repining at fancied ills, the conclusion can hardly be avoided, that human happiness is more equally dispensed by a wise Providence than superficial observers are commonly led to suppose. On looking into a dark, deep well, one would be apt to think that if he were, by untoward circumstances, compelled to descend amid the damps and to burrow like a mole beneath dripping rocks, without even feeling the balmy air of spring, or enjoying its exhilarating prospects, there would be an end to his hopes of human enjoyment. So indeed there might be, were he to carry a repining bosom with him; but even in situations the most chilling I have found cheerful and apparently contented men, and have heard the wet roof of rocks, and the very caves of the earth, re-echo to their songs whilst toiling within them for their daily bread.

The coal used at these works is sold at rather less than the price paid for it in Leeds, being at the rate of about 7s. stg. a ton, or one dollar sixty-seven cents.

After going over the works for manufacturing cast steel, we were accompanied by the son of one of the proprietors to view in detail various branches of the manufacture of cutlery, for which Sheffield is famous. The show-rooms of Mr. Rogers, whose razors and penknives are well known throughout the christian world, wherever chins are shorn or quills are clipped, contain a glittering array of polished steel and silver plate, arrayed in glass cases. Every stranger who visits the rooms usually purchases a few articles, as a sort of *douceur* for the sight of this museum of curiosities, fabricated by refined skill in the art of cutlery. Here, as at Birmingham, are shown scissors which are almost large enough to admit a person to walk under their colossal blades when placed on their points on the



floor. Knives with a single blade, like that of a falchion, and with nearly two thousand blades, bristling in all directions from the handle, like the horrid quills on a porcupine's back, form also a part of the exhibition. Steel on all sides glitters and flashes in the sunbeams, like the surface of mirrors. To view the processes of art by which these works in metal are thus perfected, we descended to the adjacent ranges of workshops. A gray headed old man, whom I found at work there, told me that he had spent thirty-six years of his life in forging penknife blades. From long practice, he caused every blow of his descending hammer to fall with such well-directed energy upon the glowing steel on the anvil, that the plastic metal seemed to spring into the desired shape with magical celerity. By twice heating a small bar he completed the formation of knife-blades with almost as much precision and similarity of form, as if they had all been cast like pewter spoons in a mould. Where forging is thus perfectly done, the subsequent labor of grinding away superfluous parts of the metal is inconsiderable. At an adjacent forge, workmen are busily occupied in making the sides and springs of the penknives, and in still another apartment, the several pieces or parts are put together. The handles of the knives are carefully wrapped up in papers to preserve the ivory and tortoise shell from being soiled by the hands of the workmen, who polish and grind the blades.\*

In almost every department of manufactures in England, the classification of labor is carried to a surprising extent. Few articles of hard-ware, made either in Sheffield or Birmingham, are entirely completed by any one mechanic.

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\*The manufacture of various articles of fine cutlery has been successfully commenced in the United States. At Worcester, in the State of Massachusetts, penknives and razors of an excellent quality are made on a large scale.

In the manufacture of scissors, and numerous other small articles made of steel, the separate parts are forged by workmen at their small workshops, which are scattered over the town and the adjacent country. These forged pieces, bearing merely the unpolished outlines of various implements, are by the manufacturer put into the hands of the grinder to be reduced to their delicate and just proportions, and polished and fitted for market. To many of the cottages near Sheffield a small forge forms no uncommon appendage. During the intervals of household labor, the females may sometimes be seen participating in the labors of the anvil, shaping dexterously the red-hot metal, and completing many of the manufactured articles of iron, which are sold at such moderate prices in the United States. A gentleman, long resident in Sheffield, stated to me that he had seen a grand-mother and her two grand-daughters busily engaged around the same forge; and in these districts I have had opportunities of observing young girls wielding the file and hammer amid wreaths of smoke, with their ruddy cheeks rivalling the glow of the red-hot iron, and the snows of their necks tinged by the soot of the smithy. They flourish files and rasps with such effective strokes, that they even might excite the emulation of the journeymen blacksmiths in the United States. Nearly all the screws, and it may be added, small wrought nails, exported to America, are made by the hands of the fair ones of Sheffield. Some of the amazons, I was informed, even make spikes in considerable quantities. You may imagine, on beholding one of these female artists, that you have before you a descendant from the fabled race, Venus and Vulcan, when a mild blue eye occasionally beams upon you, and ruby lips, and teeth like rows of pearl, form a brilliant contrast with the veil of soot, that imperfectly conceals these charms. Whilst you are admiring the artist, rather than her skill, you may

feel some surprise on remarking her muscular arms enured to powerful action ;—as if the attributes of the Divinities of Love, and of Blacksmiths—of internal and external fires, were combined in the person of the fair one before you.

In the operation of making files, the piece of untempered steel is cut with a chisel. At every stroke of the descending hammer, a furrow is cut across the file, the chisel being directed by the hand of the workman. The file in the progress of being cut is placed on a block of soft lead, to prevent crushing down the ridges already raised by the chisel on the opposite surface. Many unsuccessful attempts have been made to perform the operation of cutting files by machinery.

In a saw manufactory, the teeth were cut by a punch or steel die, which chips out a triangular piece from the edge of the thin steel, as fast as one can count. The greatest skill is necessary in tempering saws, to impart a proper degree of hardness, without warping or curling the thin steel plates into irregular wavy forms, which is commonly the result of a sudden change of temperature on this metal.

The operations of grinding and polishing the cutlery form a very important branch of the business of Sheffield. We went through numerous apartments of a building, 300 feet in length and 40 or 50 broad, each apartment of which contained two grindstones, and two polishing or emery wheels. Our Sheffield friend informed us that this long building was erected by a company of gentlemen for the purpose of leasing out the separate small rooms, each furnished with the necessary steam power. The grinders and polishers, who hire these apartments, are a poor and improvident class of people. The Company receive as rent for each of their rooms about 100 dollars a year, and derive a profitable income for their investment from their numerous tenants,

On entering one of these rooms, you observe men intently occupied in holding pieces of steel or iron upon stones, which are revolving with frightful rapidity. So rapid is the motion of the large stones for grinding table knives, that the absolute centrifugal force of one of them has been estimated to be equal to a power that would raise 45,000 pounds, the velocity of their circumference being nearly 4000 feet in a minute. It sometimes occurs, when these stones are impaired by flaws, that they are rent to pieces by the centrifugal force, and the fragments pass through the partitions and floors with most destructive violence, producing effects nearly as fatal as those resulting from a cannon ball. This branch of business, it is well known, is very injurious to the health of the grinders, who inhale into their lungs the small particles of steel abraded and floating like dust in the air, the stones being always used dry. These small particles lodging in the cells or air vessels of the lungs, produce inflammations and ulcerations, which finally terminate in consumptions, and destroy these men in the prime of their days. Few of them, it was observed, ever become old men; but like the sailors, whose constitutions are early impaired by exposure to various perils, they lead what they unhappily consider a merry life to make amends for its shortness, and are found dissipating much of their time and money in the ale-houses.

Philanthropic philosophers have made many attempts to remedy the unhealthiness of this trade by various contrivances, calculated to expel from the rooms, by means of revolving fans and trunks or tubes, the floating particles of steel; or to collect them on magnetic mouth pieces from the air, (as the particles containing iron in black sand are separated by the magnet) before they pass into the lungs. Owing either to the insufficiency of these contrivances to answer the purposes for which they were intended, or, as



is most probable, to the reckless indifference of the workmen, I saw these inventions in actual use in only three or four rooms.

Montgomery the poet resides in Sheffield, and has the management of a newspaper printed here. He is, as our Sheffield friends stated to us, no less respected for his mild virtues as a man, than admired for his excellence as a poet. It cannot be amid the smoke of the forges of Birmingham, that associations of quiet scenery, or of Arcadian employments could have excited and inspired the plaintive melancholy muse of Montgomery. His lyre, however struck, like that of Anacreon, sounds to one chord alone—that which excites feelings of love and sympathy for all mankind.

A labor-saving plan has been adopted here in the transportation of coals from the mines by the canal. The small wagons or boxes with iron wheels, used in the coal mines to receive the mineral when first broken from its deep and dark bed, after being hoisted from the mine, are rolled into the canal boats, and are transported together with their loads to the yards in the town. Here their contents are discharged into carts placed in proper positions beneath them to receive the falling coal, which may thus be delivered at the doors of the manufacturers without incurring the expense of being more than once lifted by the shovel. The canal boat itself is an object of curiosity, being constructed of sheets of iron, like the laminated structure of a vast iron steam boiler, floating buoyantly upon the water of the canal.

Horse-hair cloth, for coverings for chair bottoms and sofas, is manufactured here. The weaving of hair is performed like that of other plain fabrics of the loom, with this difference, that the hairs are drawn singly through between the threads of the warp. A little boy or girl stands by the side of the loom to attach each hair to the

shuttle. Hair being stiff and elastic is unfit to be wound upon a bobbin and inserted into the cavity or box of the shuttle, like the weft of woollen or cotton. The weft is drawn in, hair by hair, and is beat up by the reed in the usual way. The chain or warp is made of strong black thread, the hair being in short fibres and unsuitable for this purpose.

#### DEPARTURE FROM SHEFFIELD.

A drive of a couple of hours takes you from Sheffield to Bakewell, a distance of about sixteen miles. The road passes over some of the bleak barren hills called moors. On entering the county of Derbyshire, the traveller gets into the region of hills, from the summits of which he may occasionally look down on well-cultivated valleys, exhibiting a peculiarly pretty appearance, with the fields divided into squares by the deep green lines of dark hedge-rows.

At Bakewell the inn is spacious, and so well provided with obliging servants, that the traveller is at once disposed to rest here to enjoy the real "comforts of an English inn." The passage way of the entrance is furnished with all the apparatus for sporting. A gentleman who had passed two or three days here in angling for trout, replied to my inquiries relative to his success, that he had received the usual remuneration of an angler, a "few glorious nibbles."

#### HADDON CASTLE.

Strolling along the banks of a clear stream about two miles, I applied the ponderous knocker to the oak gate of the solitary castle called Haddon Hall. The sounds, multiplied by the repeated echoes from the angles of the walls

and recesses of the interior, seemed to break the spell of silence which prevailed. An old steward and housekeeper, the only tenants of this gloomy castle, made their appearance at the summons, causing the expanding gate to emit discordant sounds as they swung it around upon its creaking hinges to admit me. The proprietors of Haddon Castle for ages have preserved every part of it as nearly as possible in the state in which it existed in the days of baronial magnificence. Even the very furniture, and the tapestry, beds and chairs, used by the occupants of this castle two or three hundred years ago, are carefully kept in their ancient state.

On entering the castle, and surveying these venerable relics, the effect is truly surprising, and not unlike that produced on the Prince in fairy tales, when he visited the enchanted castle of the Sleeping Beauty, to awaken her from her slumber of a hundred years. Although the visiter here finds the furniture in its place, and a plenty of dust and cobwebs, to denote antiquity, yet he will not encounter any spell bound ancient guards, "standing in ranks and snoring with all their might," during their long uninterrupted nap of a hundred years. One of the towers and wings of this castle was erected, it is stated, more than six hundred years ago. So cheerless and inconvenient, contrasted with the light modern furniture, are the relics of former days, that the housekeeper has abandoned the open castle halls and chambers of state, and ensconced himself in one snug corner of the building, where he can enjoy some of the creature comforts of the present generation of men. After passing beneath the strongly secured gateway, you enter the court yard; which has truly a solitary appearance. A crust of moss has accumulated upon the flag stones, as upon the surface of ancient rocks, where this lichen, undisturbed by human feet, delights to vegetate. It is difficult to walk over some

portions of the stone pavement without danger of falling upon the slippery surface. The visiter is first conducted to the chapel, the walls of which are stained with mildew. Upon one of the window panes is recorded, in semi-transparent figures of stained glass, a date as far back as the fourteenth century.

The spacious dining hall is furnished with massy oak tables, constructed of planks half a foot thick. From the appearance of their furrowed, deeply worn surfaces, they have been in use during successive generations, and, instead of being washed, have always been cleaned by the process of scraping, in the mode practised at the present day by the butchers to whiten their meat-benches in the city market-houses. These tables are framed with timber, and may be considered rather as fixtures than as resembling the tables of modern workmanship, which, all radiant with the rich wavy colors of the Indian wood, are moved upon the brass wheels of castors about a fashionable drawing-room, as easily as if they were floating on the surface of a fluid. The walls of the hall are wainscoted in ancient style with great pannels of English oak, upon which are hung antlers and other spoils of the chase, in the feats of which the old hunters took their principal delight.

Adjoining the hall, the kitchen exhibits the culinary conveniences of former days. Judging from the spacious size of the hearth and fire places, the guests must have estimated the sumptuousness of a feast rather by the quantity of viands bountifully heaped upon the board, than by any fastidious taste about piquant sauces and the refinements of modern cookery. Leaving the precincts of the kitchen, and mounting into the towers by narrow winding stone steps, you behold the armory, stored with great cross bows, spears and other implements of ancient warfare.—The circular chambers within the towers have floors coat-



ed with a sort of cement or hard mortar. Following still the guide, you are conducted successively through various other apartments of the castle, in each of which he stops to deliver a short explanatory address. One apartment he designates by the name of the Cedar-room, upon the odoriferous red pannels of which are carved rude portraits of some of the former proprietors of the castle, cut in relief and flourished around with mouldings. In another room, the walls are covered with tapestry hangings, which, loosely suspended, wave to and fro on the opening or shutting of the door. These all remind one of the descriptions of old castles in the pages of romance, where trap-doors, vaults, ruinous towers, winding stair-cases and dark passages, have all been conjured up with such pernicious effect to terrify the youthful imagination. The scenes in the *Mysteries of Udolpho*, as a gentleman of Sheffield stated to me, were drawn from the localities of this old castle, Mrs. Radcliffe having actually taken up her residence here for several weeks, for the purpose of giving more thrilling interest to her descriptions. The blue room, and even the antiquated bed curtains, stand with all their faded honors mantled with the dust of ages. The tints of the curtains, as well as the pictured designs of the tapestry,

“The storied arras, source of fond delight,”

are now nearly all blended in one uniform dusky hue.

Tapestry is now rarely to be seen, and is no where manufactured except as a sort of royal plaything at the national manufactory of the Gobelins at Paris. Superseded by the modern improved paper hangings, whatever charms, real or imaginary, it may have once possessed, it will probably survive only in the recollections of poetry and romance.

On terminating a visit at one of these castles, you can feelingly exclaim in the eloquent verses of an English poetess :—

“ Oh ! better that the ivy wreath  
Should clothe the mouldering tower,  
Than it should be a place of strength  
For passion and for power.  
All glory to those stern old times,—  
But leave them to their minstrel rhymes.”

#### ANCIENT BARONS.

During the feudal ages, every baronial residence, of which the one described is a specimen, was fortified as a sort of tower of refuge, secured by massy lofty walls, gates studded with broad-headed iron nails, and a portcullis, to drop like a guillotine, to close the entrance, should rushing foes gain access, and, by their impetuous career, be able to prevent the recoil of the closing gates. With its iron edge it descended perpendicularly, impelled by its own great weight when the cord that held it suspended was loosened, slicing, in its way downward to the grooved pavement, through every opposing obstacle, from the brass crest of the helmet, to the spurred heel, of the warrior.— These precautions were all necessary to resist the sudden and often treacherous attacks, which neighboring feudal chieftains frequently made upon each other.

Every feudal lord or baron was a petty sovereign over his tenants, who actually held their lands by the tenure (called socage) of rendering their services in different capacities to defend the castle of their lord or chieftain, whenever attacked ; and to assist him in his petty warlike excursions. These tenants or vassals collected their dwellings close around the castle walls, for the purpose of seeking within its gates protection for their families, cattle and other property, against the adherents of neighboring

barons. Each baron considered himself bound to protect the persons and property of his vassals. Those persons, who neglected to put themselves under the protection of some such chief, were exposed to depredations and wrongs, which they had the power neither to resist nor to revenge.\*

The country thus became divided into baronial districts, some of the noblemen of which became almost too powerful to be controlled by the paramount authority of the king himself. Cromwell employed the armies of the commonwealth, composed of soldiers who had suffered under the evils of this system, and who were like himself at the commencement of his career, levellers in principle, in the demolition of these castles, which had become so notoriously the seats of oppression and of infamous crimes. Against the improved artillery at the command of Cromwell, the castles were able to oppose only a short resistance,

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\*The control exercised by some of the barons in ancient times over their vassals was almost absolute. The ballad narrating the battle of Chevy Chase, although not founded on historical facts, may serve to indicate what trivial grounds of quarrel caused the blood of the followers of neighboring chieftains to flow in furious onsets. In the feudal broils which frequently happened, the vassals or tenants were called upon, and in default of appearing at the summons to arms, with their workmen, they forfeited their lands to the baron.

Chieftains or barons, thus surrounded by defenceless tenants, dependant on their favor for protection, became absolute despots. Those rude ages, it may well be supposed, were not without excesses of feudal chieftains, who governed castles and numerous vassals, but were not always found capable of governing their own passions. They frequently indulged their vicious inclinations, by acts of extortion and violence. Exactions of property were obtained from dependents, and some of the strangest customs in morals introduced, that can well be conceived. It became the established prerogative of some of the feudal Lords to supersede the bridegroom on the bridal night, and it is stated on the sober pages of a modern traveller, that even at the present day a sheep is presented by the peasant of some of the Scottish Isles, on his wedding day, to the proprietary Lord, as an acknowledgment or relic of the commutation of this ancient custom.

particularly when garrisoned by vassals who favored the cause of freedom. He made a boast of rooting out from the land these "strong holds of Baal," leaving every castle that resisted him a pile of smoking ruins. Haddon Castle, situated on the declivity of a hill, is so completely overlooked and commanded even by common musketry, if stationed above on the impending eminences, that it could have opposed no effectual resistance. It was spared without being ravaged, and fortunately for the curious, still exists as a specimen of ancient baronial magnificence.

This feudal system was first established by William the Conqueror, who deprived the Englishmen of their estates, which he parcelled out among his followers on condition of their rendering to him certain services. Although the English king, as a superior lord, received the formal honors of homage from these feudal chieftains, and had a right to call them out to war, and even to confiscate their estates in case of rebellion, yet in other respects they were independent, and were sub-kings over their immediate vassals. The barons made laws and executed them at their pleasure, and according to their own construction.— They coined money in some instances in their own names, and declared war with neighboring chiefs. Right was decided by might. In this state of feudal anarchy, so harassed and miserably wretched were the people, that an old English writer, in describing the evils of those days, says, that the great barons "grievously oppressed the poor people with building castles; and when they were built, they filled them with men, or rather devils, who seized both men and women and possessed themselves of their property. Hence many young ladies, who dreaded such violences, were induced to seek shelter in convents, and even to take the veil, as a further security to their virtue." The trader could not travel with his goods in safety, being liable to be pounced upon by the inhabitants



of every castle he passed, and plundered without hope of redress. From this state of abject vassalage, the people became gradually freed, by their taking sides first with the kings against the nobles, and then with the nobles against the kings, and finally by triumphing over both, in the days of Cromwell.

So intolerable were the evils of those barbarous ages, that a class of men, called knights, formed associations for the redress of private wrongs. Their exertions were attended with the most happy effects in ameliorating the state of society, although the very name of a "knight errant;" in modern times, excites a smile, associated as it is with the Quixotic excesses of a distempered fancy, as portrayed by the humorous pen of Cervantes. These knights errant were of course popular with the ladies of those days; for, on being dubbed, every true knight swore "to protect the persons and reputations of virtuous ladies, and to rescue at the hazard of life, widows, orphans, and all unhappy persons, groaning under injustice or oppression." Then the ladies and assistant knights adorned him with armor, and with spurs and a sword. Princes were proud to receive the honor from the hands of private gentlemen, and manners more gentle and polished became fashionable.— Thus an important improvement in the state of society resulted from elevating the standard of female character.— Woman, since that period, has been respected and courted by kings, and nobles, and plebeians.

#### CHATSWORTH HOUSE.

Returning to the inn, we proceeded in a post chaise to Chatsworth House, the palace of the duke of Devonshire. This building, in its design and construction, is truly magnificent, and affords to those who have viewed the old castle an opportunity of contrasting ancient and modern mag-

nificence. The building is of great dimensions, and is constructed of hewn stone, with all the nicety of workmanship that might be expected, were it situated on one of the public squares of London.

A couple of footmen, dressed in lace liveries, opened the door of the post chaise, and offered the aid of extended elbows with as much officious attention as the duke himself could have received, on his arrival within his own domains. The palaces and fine country seats of the nobility are thus in general hospitably open to the visits of strangers, every day, whilst the families of the proprietors are absent; and on stated days in each week whilst their families are at home. An American gentleman informed me, that having applied at the palace of a noble earl near Chester for permission to view the apartments, on a day when visitors were excluded, this nobleman, after being informed the applicant was an American, courteously admitted him, retreating with a part of his family from one door of an apartment while he entered it by another. Attended by the servants, rendered assiduous in their attentions to please by hopes of fees, the stranger may feel for a time as much at his ease in one of these palaces as at an inn.

A broad stair case formed of white marble, with a profusion of sculptured mouldings, first conducts you to a chapel, the walls of which are also incased in nearly all parts with costly polished marble, of various colors.— You pursue your way from one room to another, now gazing at splendid furniture, pictures, state-beds and various other showy objects, and now at the ceilings adorned with paintings, illustrative of the fabulous history of the Gods, completed, as may be supposed, with great difficulty by an artist whilst lying upon his back, on an elevated scaffold. One room is decorated with carvings in wood of pheasants, and other birds, cut with fidelity to resemble the natural objects from which they are copied.—

A large hall is fitted up completely as a museum, and is furnished in a most liberal manner with costly statues and busts from the classic ground of Greece and Italy. Cabinets, filled with splendid specimens in mineralogy, and with all the various objects of curiosity usually found in a choicely selected collection of natural and artificial curiosities, are here collected and arranged for show. The former as well as the present duke of Devonshire has been animated with a zeal for antiquarian research, and has formed a motley collection of mutilated marble statues, some with heads, and some without, together with detached miscellaneous heads, legs and arms, dug out from beneath ruins in Italy and Greece. They are from age and exposure stained of a yellow hue, and for any other eye than that of an antiquarian, possess no charms. A beautiful statue of Venus, lately sculptured by Canova, displays an attractive contour of form to rivet the attention, and add interest to the survey of other costly objects collected here. One of the late duchesses, participating in the elegant taste for literature and the fine arts, became, from her ample command of funds, a patroness of poor authors. It is related that one of them, inspired by the Muses, addressed to her his production, in which he repeatedly referred to Genius, by the relative, *she*. Upon being asked the reason of this unusual change of sex, he replied, that he had changed the gender in compliment to the duchess of Devonshire.

In the pleasure grounds, jets of water spout up in profusion, forming by their combined waters, cataracts nearly equal in volume to a small river, and river Gods are stationed as usual among the gushing streams. The cost of this palace, with all the curiosities collected within and around it, is estimated at nearly a million of dollars, and the annual charge of keeping all of it in repair and good order for perpetual exhibition requires, in addition, a princely

income. Here is an example of the manner in which men may give full scope to the gratification of their fanciful desires, when they possess wealth sufficient to command almost every thing that the magical lamp would procure for Aladdin, whenever he chose to rub it and to order the fabled Genius to appear to execute his wishes. Indeed, in England gold seems to be the representative of the lamp of Eastern romance, for whenever it is rubbed between the fingers, and its metallic brilliancy is made to appear, there are always at hand thousands of "slaves to the lamp," ready to hurry in the performance of almost every service.

Resuming a seat in the Post Chaise, I directed my course to Castleton, to explore the celebrated caverns of Derbyshire. Our road conducted us over a region of country broken into peaks and cliffs of limestone, amid some of which the dark mouths of the shafts of lead mines appeared in sight.

#### A GIBBET.

On the top of a distant hill I observed a post about 30 feet high, with an arm stretching horizontally from its top, like the arm of a tavern sign post in New-England. From the extremity of this arm, where the vibrating sign board is commonly seen to swing in the breeze, an object appeared to be suspended, of a very remarkable form. The outline of the figure, as viewed against the dark blue field of air, resembled that of a man. I was not long at a loss in conjecturing that the object before me was a *gibbet*,—a spectacle novel to every American, who in his own country is a stranger to this mode of exposing the lifeless remains of a criminal, upon whom the law has wreaked its vengeance. To gratify my curiosity to observe the manner in which the mechanical process of Gibbeting is



performed, the post boy drew up by the road side, near the spot upon which the gibbet was erected.

A strong mast or post is set firmly in the ground, with the surface of its rising shaft bristling with nails and sharp hooks, to prevent any one from climbing to the top. The bottom of the mast is also girded with iron bars, to prevent its being cut down. From the extremity of the horizontal arm, a sort of iron basket or cage, of the exact outlines of the human form, and filled with the white bones of the criminal, appeared suspended.

The body, immediately after being taken lifeless from the gallows, is put into the hands of the officers, who are to execute their part of the sentence of the law. Commencing with the foot, they bind around each leg flexible bars of iron, proceeding upwards spirally, like twining coils of a snake, until not only the muscles of each leg, but those of the trunk and neck, including even the head, are thus invested with the coils of iron. To keep the spiral circles in their place, they are riveted to bars extending the whole length of the body, one on each side. So closely is the human form clasped in this iron embrace, that when the flesh shrinks away, and blackens in perishing, or is extracted from between the bars of the frame-work by birds of prey, the rigid hoops retain the exact effigy of a man, swinging to and fro in the breeze, like a ribbed skeleton. The bones, after all the flesh has disappeared, are retained in their position, bleaching in the sun and rain for ten, or even sometimes during fifteen years, until the wooden shaft that upholds them has mouldered away. A gale of wind finally prostrates the whole, and the exhibition is thus terminated. This gibbet, the post boy stated, had been erected nine years ; and judging from its appearance, it will probably last five or six years longer. During this period, it is intended to operate as a terror to evil doers. According to the authority of the post boy above quoted,

this spectacle has not had the effect intended, for in one of the nearest houses commanding an unobstructed view of the gibbet, a murder was not long since committed. Gibbets are usually erected in the vicinity of the spot where the crimes that give occasion for them are perpetrated. Pirates are gibbeted on some point of a headland in a bay or harbor frequented by ships.

A gust of wind swept by, whilst I stood contemplating this sad spectacle of human justice and of human frailty, and the sound of it rushing between the crevices of the iron frame actually produced the "sighing through the gibbet," a phrase which I had always considered a figurative expression, rather than as one descriptive of a common occurrence.

## CAVERNS OF DERBYSHIRE.

The valley in which the village of Castleton is situated is neatly cultivated, forming with its green fields, and gentle slopes, a pleasing contrast with the rugged hills which embosom it. At the distance of only a few yards from the inn is the entrance to the celebrated Peak Cavern of Derbyshire, as it is called by its classical name. Following the bank of a fine clear brook, you come in sight of a perpendicular precipice several hundred feet in height, with a fissure opened into the face of the precipice, as if rent by some convulsive throes of the mountain. Upon the verge of this precipice, the ruins of the Castle of Peveril of the Peak are perched, with walls almost overhanging the chasm into which it seems ready to slide off. He must have been a strange old fellow to select so inconvenient a site, and to build a castle where you would expect rather to see an eagle's nest. This castle has given "a local habitation and a name" to one of the heroes of Scott's novels.

A stock of consumptive looking candles, and some gunpowder, were produced by the guide, who conducted us into the celebrated Cavern. Following his footsteps we turned a jutting angle of rocks at the foot of a precipice, and had at once a full view of a huge aperture, disclosing a dark passage extending beneath the mountain. The roof of the cavern sweeps over almost with the regularity of an arch of a stone bridge, forming a span of 120 feet, with a vertical height of 60 feet, above the pathway. The

rocky ceiling is visible about 200 feet horizontally beneath the mountain.

Upon the flat floor of the cavern, trodden smooth by frequent footsteps, a number of rope makers are engaged in spinning twine and cordage. You seem to be entering a huge ropewalk, rather than a romantic cavern, when you find yourself surrounded by rattling spinning-wheels operated by the poor people who carry on their laborious trade under the shelter afforded by the natural roof of the cavern. Whenever they cry out to each other to regulate the operations of their manufacture, their voices resound from the rugged sides and arches of the impending rocks, with a peculiarly shrill echo. Our guide informed us that most of the twine made here is purchased by the merchants in Sheffield, to be sent to the United States. American commerce seems thus to impart life and animation to the very caverns of England, as well as to her populous manufacturing cities. One of the spinners, an old man, seemed fully to understand the practical parts of Political Economy. Having been informed, during an accidental conversation with our guide, that I was an American, he entered upon a discussion of the corn-laws, which prohibit the importation of American flour. He observed that the American farmers would naturally be unable to pay for British goods, if their corn should not be received in exchange; and that a set of manufacturers would rise up in the United States who would take the farmers' corn, and make goods in return for it. It was no less surprising to hear the old man discussing these mooted points of political economy in the Peak cavern in Derbyshire, than to find it converted into a ropewalk. The impatient guide broke off my colloquy, and hurried me into the dark recesses, putting a candle into my hand, and enjoining me to follow him closely.

A narrow brook murmurs over the rocks along the whole



course of the cavern, and upon its rocky verge the visiter follows a gloomy and rugged pathway, until he arrives at a defile, where the arch of rocks stoops so low as nearly to touch the brook, which here occupies the whole floor, and leaves him no alternative but to wade through it, or to navigate its waters. This place is called by the guide, the Styx, and a boat that might answer the poetical description of that of Charon is in readiness, to receive you in a recumbent position, stretched at full length upon your back. The guide wades through the water, pushing the boat along before him, stooping to pass beneath the low shelving roof of rocks. When the light of the candles flashes upon their rugged surfaces, they seem to bend down as if threatening the face with an unwelcome salute.

A pretty little girl, the daughter of our guide, now ascended eighty or ninety feet, by clambering among precipitous rocks, and in a few moments she partially illuminated the cavern with her farthing candles, which threw faint gleams upon the projecting outlines of the roof and sides, leaving the deeper recesses hid in impenetrable darkness. At a part of the cavern where the roof is so high that it can scarcely be discerned by the aid of the lighted candles, a rude cliff juts forward, resembling a gallery or orchestra, which is also illuminated by the sprightly little girl, who sings there for a few moments to exhibit the remarkable effect of multiplied echoes.

To afford the visitant the full enjoyment of echoes, the guide fills with gunpowder a hole drilled in the rock, the explosion of which seems to lift at once the massy strata from their very beds, and to shake the mountain to its centre. The shock became truly palpable to my whole frame, as if some medium more solid than thin air had conveyed the concussion. All the lights but one were instantly extinguished by the percussion of the air, and several minutes elapsed before I could distinctly hear the

voice of the guide. For several weeks, indeed, my ears did not recover from the shock of the explosion, which seemed as violent as if produced by bursts of thunder, a thousand times repeated from every chamber and passage of the cavern. The Peak cavern is accessible 2250 feet, proceeding nearly the whole distance horizontally by the side of the brook. Our guide observed, on parting with us, that we had now seen the largest cavern in the world. He would not listen to any account of the great caves of Kentucky, in which persons have lost their way, in wandering among the numerous intricate passages, that wind for miles beneath limestone rocks. He still insisted, that this is the greatest cavern in the world.

About a quarter of a mile from the Peak cavern is the Speedwell mine, the shaft of which was originally sunk for obtaining lead ore; but after about eighty thousand dollars had been expended, it was found so unproductive as not to repay the expense of working it. In the progress of extending the drifts, the miners struck upon some immense caverns, which from their location seem to be a continuation of the great Peak cavern. These newly discovered caverns, for stupendous height and extent, are truly objects of curiosity.

The mouth of the Speedwell mine gives no external indication of the wonderful natural caverns to which it serves as a passage-way; for its artificial door-way, and its well constructed flight of steps, may beguile you into the belief that you are going down into a wine cellar. After descending about forty or fifty feet, the visiter places himself in a boat, and is transported along a narrow canal without further inconvenience than what is produced by the moisture, which distills upon him from the low roof of rocks, beneath which he sails. About midway of the passage, a subterraneous cataract is heard pouring over the sluiceway into a cavern far beneath the pent up waters of

the canal. The fall of the water, shrouded in darkness, into an unseen abyss, upon the brink of which you find yourself to be floating in a boat, and apparently drawn along by the current to be plunged over with it, excites intense emotions of surprise and curiosity, and imparts an indescribable interest and charm to this excursion. The roaring of the waterfall is re-echoed from side to side, and is increased and magnified at every successive reverberation along the tunnel, where the effect seems to be multiplied as if the listener had taken his station in the flaring brazen mouth of a vast trumpet, and the voice of the waters were speaking through it to his immediate ear in tones of thunder. The large cavern at the end of the horizontal passage, which is nearly half a mile long from the place of entrance, is of vast dimensions. The lofty roof is not distinctly visible even by the aid of the lights burned by the guide, who states by way of illustrating its extreme elevation, that a rocket ascends not so high as to reach it.—The height of this cavern cannot of course exceed that of the hill above it, which does not appear to exceed 700 feet.

In this cavern there is a vastness to which the feeble rays of the lights disclose no limits, as the eye looks either toward the roof of the cavern, or into the abyss into which the cataract tumbles amid thick darkness. The surface of the reservoir into which it falls, for aught one, from his powers of vision, can determine, may be spread out into a subterraneous lake. The imagination is thus left uncontrolled to extend its flight to remote and viewless shores. The never-ceasing reverberations of the subterraneous cataract complete the spell of this wonderful region, where just enough is seen and heard and feared to overpower the mind with awe. The magnificence of the caves in the earth beneath, as well as of the spacious firmament on high, is thus calculated to lead man to think

of the great Creator of all things, "who in his strength setteth fast the mountains, and is girt about with power."

On considering the natural situation of the Peak Cavern and of the Speedwell Mine, it would appear that the brook described as flowing out of the mouth of the former cavern is the same which crosses the gallery of the latter, filling it with water and converting it into a navigable canal. The superfluous waters, after filling the canal, have been allowed to pass over the waste gate, and to descend about forty feet into an inferior cavern nearly filled with the accumulation of the stagnant water poured into it, from whence it perhaps may continue to flow on by its hidden channels to the adjacent chambers of the Peak Cavern. The magnitude of the inferior cavern, which receives the waters of the cataract, may be imagined from the statement, that, during the period of five years, whilst the mine was worked, all the rubbish of the mine was thrown into it without raising any perceptible mound above the surface of the water.

The formation of some of these caverns may be attributed to the action of the brook itself and of other percolating streams. Water, it is well known, when combined with carbonic acid, will dissolve lime stone; and thus impregnated, the springs and rivers in regions, abounding in strata of this peculiar formation, are rendered unfit for drinking, every individual drop carrying with it toward the ocean a disintegrated particle from beneath the piles of lime rocks out of which it issues. This brook may probably have been thus silently performing its labors of sapping and mining these cliffs of Derbyshire, through the shelving crevices of which it has been flowing for countless ages, until it may have furrowed out and worn away, particle by particle, vast masses, leaving a succession of vacant chambers along the channels through which it has insinuated itself. Similar caverns might probably



be found to exist still further beneath the hill, were it possible to explore its dark and hidden recesses. Indications of latent streams and of their wasting action upon the limestone, forming the substratum of a district of country, are frequently observable elsewhere. The surface of the soil, in such instances, sinks into conical cavities, shaped like a punch bowl. In travelling over Kentuckey, I have noticed these conical hollows, called there "sink holes," where the soil has fallen into empty caverns, opening into numerous shelving seams of the lime rock. The celebrated caverns of Kentucky, it is stated, appear as if a river had once flowed through them for many miles in extent, to which distance they have been explored. In comparison with those American caverns, these of Derbyshire are of small dimensions. Some of the caves here, however, appear to be of too high and lofty dimensions to have been all worn away by insinuating water courses, and were probably created in the original formation of the rocks, the structure of which is commonly full of open seams.

In one instance in the United States, a mill owner, after building his dam and water wheel, was surprised by the sudden disappearance of the river, which, under the accumulated pressure of the head of water raised against the embankments, had forced a new passage among the shelly lime rocks beneath the bed of the channel, and disappeared entirely from sight, leaving a slimy meadow in place of the mill pond, and emerging to the light some furlongs below the motionless water wheel.

Near the Speedwell mine is the shaft of another lead mine, from which the ore is at present obtained. Several men were at work in the low veins, engaged in blasting rocks of exceedingly hard texture, in which the lead ore is imbedded, mingled with quartz. Near the mine a heavy millstone hooped with iron was trundled around on a circular path or bed by a horse, to crush the fragments

of ore, which is afterwards subjected to the heat of a furnace to be smelted, lime being used for a flux to cause the metal to be separated from the stone.

The lead mines in England are wrought with extreme labor, and the stone, in which the cubical lumps of lead ore are imbedded, lie in deep seams. In consequence of these natural disadvantages, the metal cannot be afforded at so low a price as at the lead mines in the Western districts of the United States, where it is gathered in great abundance from the cliffs or rocks near the surface of the earth. In 1829, above 14,000,000 pounds of lead were extracted from the mines of Missouri. Should those mines be worked with the skill and enterprise manifested in all similar undertakings in England, lead must eventually form a valuable article of export from the United States, as probably no country of Europe possesses mines so abundantly stored with this mineral treasure.

After visiting a show-room, forming quite a museum of specimens of Derbyshire spar, and of vases and numerous other articles wrought from it, we crossed over a mountainous ridge lying between Castleton and Chapel le Frith. At the obscure village bearing this name, a canal is terminated at the foot of a long inclined plane, formed by an iron railway. This inclined plane is constructed to slope from the top of a neighboring hill, to facilitate the transportation of limestone from its summit. The descending wagons, loaded with limestone, draw up the empty wagons, and thus the process of loading the canal boat goes on with great despatch and economy. From hence, most of the limestone required for the lime kilns of Manchester is procured.

While returning to London, we passed through the village of Stafford, on the day of a fair. The most attractive objects to a traveller were the numerous rosy country girls, whose cheeks appeared nearly as red as the coats of the

soldiers, who were sprinkled amid the crowd. As is common at English fairs, booths were arranged for the sale of trinkets, ribbons, and all those petty wares which are vended from pedlars' wagons in the United States, wooden clocks always excepted. The crowds are rather disposed for amusement than for traffic, the fandangos, swings, and other recreations, calculated to amuse "children of a larger growth," are generally resorted to for pastime.

## EXCURSION TO THE SOUTH OF ENGLAND.

To make a short tour through some of the southern counties of England, we left London in the coach for Portsmouth. Our ride was rendered pleasant, by a well cultivated country, adorned with gentlemen's country seats and the neat cottages of their tenants. The cottage of Miss Porter, the novelist, was pointed out to us, and also Claremont house, the favorite residence of the late princess Charlotte, and the place where she expired. Its salubrious air would seem to recommend it to royal favor, rather than the fertility of its soil, which is sandy, and mostly covered with pine trees. An old lady in the coach, with a disposition to indulge in a little scandal, descanted loudly upon the parsimonious spirit of prince Leopold, affirming that he had sold, after the death of his wife, every disposable article from this estate over which he had control. A paragraph actually appeared in one of the newspapers, stating that he had sold the dresses of his deceased wife, and even the baby-linen prepared for the expected heir to the crown of England.

For many miles before we arrived at Portsmouth, we crossed successive ranges of bald lofty hills, composed of solid chalk with nodules of flintstones intermingled, like plums in a white pudding. Not a tree, nor a bush, relieves the eye on gazing at the rounded smooth outlines of their swelling summits ; but the thin turf covering of these huge chalk-hills, appears like that of closely shaven



lawns. It is stated to be a remarkable fact in geology, that no chalk is found either in North or South America. The soil of a considerable portion of England is composed of this substance, and the immense cliffs on the borders of the shores, laid bare by the dashing of the waves, have given to the whole island the name of "Albion," in allusion to the Latin name for their peculiarly white color. These hills of chalk, called Downs, yield only a short thin grass fit for the pasturage of sheep, which seem like specks sprinkled over their distant green summits.

A traveller rarely finds himself in a more uncomfortable situation than when travelling in a coach over these chalky roads on a bright day in summer, and during a dry state of the weather. The light of the sun is reflected from the white roads, whilst the impalpable dust which is raised by the horses, surrounds the coach like an ever accompanying white cloud, impenetrable by the eye as that which Virgil describes to have enveloped Aeneas and his companions. Not only is vision intercepted by this attendant cloud, but even respiration becomes impeded, and a sense of suffocation ensues. On alighting at Portsmouth, the passengers might have been mistaken for a cluster of millers, with their powdered hats and coats of the uniform color of meal.

It being the day of a fair in Portsmouth, the coachman with difficulty made his way through defiles of wagons and booths, and throngs of women and children collected together on the occasion.

To witness the scenes of an English Fair, we sallied forth from the inn. One of the principal streets of the town was lined with booths, upon the broad shelves of which, gingerbread, confectionary, and other similar articles, were arranged, together with trinkets, ribbons and other finery, as usual.

Leaving the group of children that surrounded these

booths, I proceeded to some covered wagons, from their magnitude almost worthy of the name of portable houses. They were surrounded by a thick array of women, men, and boys. These proved, unexpectedly to me, to be attentive spectators of theatrical performances, exhibited by actors strutting in primitive Thespian style on the platform of their wagons, which contained the orchestra as well as all their scenery and wardrobe. Their mode of delivery is well adapted to the time and place, being made up of vociferation to overpower the buzz of voices, and the rattle of passing carriages; whilst the sweeping action of their legs and arms also arrests attention, as the eye is readily attracted by the moving pinions of a windmill in a gale. Shakspeare must have experienced a squeamish horror of these ranting exhibitions, when, as a sensitive author, he says, "I had as lief the town-crier had spoken my lines." The pieces are short, and as a sort of prologue to each, a contribution box is handed round, into which the occasional chink of copper half pence tells the score of their gains. The approbation of the audience, as manifested by the scanty contribution, having proved unsatisfactory to the actors, they came to a pause, hoping probably that a little delay might whet the curiosity of the audience; or that their impatience might induce them to surrender what their parsimony had prompted them to withhold—a few more of their pence. Without this token of encouragement, it seemed probable that they would no longer lift up the light of their countenances for the gaze of the mob, wisely deeming like the Greek philosopher, that those who enjoy the rays of the lamp must supply it with oil.\* A new circle of spectators with fresh ardor was finally formed, and harlequin and Columbine by turns received the plaudits of

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\*In this age of mechanism, the same allusion is more familiarly made by a term in which the same oil is supposed to be physically employed as an anti-attribution unguent for "greasing the wheels."

a group of spectators quite as motley in character and dress as the actors themselves.

At the next wagon, my ears were saluted by the shrill squealing voice of Punch, interrupted at times by the usual tokens of conjugal regard for Mrs. Punch, upon whose head such a shower of blows descended from the rapid vibrations of a cudgel, that were it made of any thing softer than wood she might soon have been considered as past the art of surgery. Still pursuing my course slowly through the crowd, I arrived at the traveling castle of a giant, whose banner on the outward wall proclaimed him seven feet four inches high. As co-tenants of his travelling establishment, a humble Dwarf only three feet high, and an Albiness, were also advertised upon a lettered flag. The building itself was an object of curiosity, mounted on four wheels, and nearly as large as a small dwelling-house, with windows and doors arranged in all the formality of domiciliary architecture. In company with my friend I ventured to ascend a few steps, and to enter with about a score of men, women and boys. The door being closed, the giant stalked forth from behind a curtain at one end, and the Dwarf and Albiness from an apartment at the opposite end, the Dwarf circulating his diminished form between the legs of the giant, by way of showing the disparity of their respective statures; and the Albiness, in her turn, presented herself with her twinkling red eyes and white hair, drawling out as she advanced a few lines of poetry. On making my exit from the show, I became sensible of an unusual movement of my pocket, as if a squirrel were nestling there. Supposing my handkerchief to be animated with the desire of changing masters, forgetful of the sophistical difference between "mine and thine," I turned suddenly upon the person immediately behind me with an unexpected grapple, and the prize was dropped at my feet. This slight offence, perhaps, might

have induced this person to desert England for Botany Bay, for the same patriotic reason that Barrington assigned, in the prologue to a play got up there for the amusement of amateur convicts,—

“True patriots we, for be it understood,  
We left our country—for our country’s good.”

In such company, and such a place, the tempter might have deserved the punishment, as well as the thief. He might, too, have obtained his desert, had he fallen into the hands of a pupil of that English Justice of the Peace, who by a strange oversight, which he always attributed to strong port, once discharged a culprit and committed the complainant.

These shows of the Fair are exhibited until a late hour of the night, illuminated by numerous lights. The din of discordant music becomes almost deafening, the performers evidently relying upon their ability to attract the multitude rather by loudness than by harmony of sounds.

In order to view the hundred ships of war, “the wooden bulwarks of Old England,” which are lying dismantled in the harbor of Portsmouth, we took a sail boat, with an old waterman for a pilot, and tacked to and fro under their lofty sterns. These ships of war look formidable even in their dismantled state, floating on the unrippled waters, resembling, as one may imagine, sleeping lions, ready to put forth their strength at the sound of war. In whatever direction you look over the calm surface of the bay, you behold ships of the line presenting to you their chequer-board sides, as the old seaman in the Pilot terms them. We went aboard of the *Victory*, of 110 guns, well known as the ship in which Nelson was killed at the battle of Trafalgar. The very spot on which he fell on the deck, is designated by a brass plate or tablet. This favorite ship of the British navy is still in service, having been engaged in



Lord Exmouth's expedition in the attack on Algiers. It bears the flag of the Admiral in the harbor, and serves for a sort of court-house for the frequent courts martial, which are holden here. The Victory, in point of size and armament, would appear like a frigate by the side of the American ship Ohio.

A fine band of music on board of her serves to enliven the quiet harbor by frequent sprightly tunes. Several of the new ships have those unsightly round sterns, constructed upon the plan recommended by Sir Robert Seppings, which probably detract about in the same ratio from the beauty and symmetry of the form, as they add to its intrinsic strength. Two new frigates are now building here with frames of the celebrated teak wood.

The chief object of my visit to Portsmouth being to view the Dock Yard, we landed near the principal gate, and were freely admitted. When about entering the yards and workshops, I was requested by the porter to register my name and place of residence. On seeing inscribed in bold characters, a place of residence in the United States, the porter shook his head, and showed the book to the Admiral, who also shook his head, expressing at the same time regret at denying an entrance into the dock yard to foreigners. This was his duty in consequence of positive orders issued from the Admiralty Board in London. By way of opening an avenue for admission, he inquired if to the name of the town inscribed, I could add "in his Majesty's dominions." The proposed device I could not, for obvious reasons, adopt, and thus ended in disappointment my excursion to the Portsmouth Dock Yard.

Portsmouth resembles in its location many of the Dutch towns, being constructed on low marshy grounds, surrounded by deep ditches or canals on the side next the land, and also by strong fortifications. The town appears at present to be exceedingly dull. It was once bustling and

prosperous, in consequence of the vast expenditures of the government for the building and equipment of ships of war. For disbursements here, a considerable proportion of the English debt has been incurred, and here the costly fleets lie rotting and dismantled. According to the navy list, there are 65 large ships of war now dismantled in this port, and 34 in service or building—making 99 ships of war, carrying 5417 cannon. Amid all these battle-ships, but one merchant vessel could be discerned.

Having taken our baggage into the boat, we again embarked, and sailed across the bay or roadstead, to the Isle of Wight. We landed at the village of Ryde, and from thence made an excursion over this celebrated island. From the florid descriptions I had read of the beautiful inland scenery and fertile soil of the Isle of Wight, I had pictured to myself landscapes and cottages, which would rival the beau ideal of the scenery of romance. A long continuance of dry weather has probably destroyed the beauty of its hills and vales ; the bright green, always so agreeable to the eye, being supplanted by an uniform russet brown color, emblematic of the decay of vegetable life.

During our ride over the island, an occasional glimpse of the broad expanse of the blue ocean, with its surface sparkling in the light reflected from small broken superficial waves, and deeply furrowed with long dark formal lines of the ridges of the great ones, arrests the attention. The sight of the broad ocean soon induced a reverie, and my thoughts travelled, with a velocity greater even than that of light itself, to the distant home and friends beyond its rolling waters.

The crops of grain appear meagre. Judging from the views we have had on the Isle of Wight, which may perhaps at this season be peculiarly unfavorable, the mere scenery does not offer sufficient beauties to recompense one for the time lost in rambling over it. He who has

gazed from the top of Mount Hope, in Rhode-Island, at the landscape spread out at his feet, where islands, and fertile fields, bays, promontories, and villages, are all beautifully blended, has beheld as fair scenery as is visible from the most favorable points of view in the Isle of Wight. After making a tour we came to Newport, situated in the interior of the island, on a small navigable river.

Upon the top of a high hill near the town is Carisbrook castle, which, as the most conspicuous object of curiosity, soon attracted our attention. We here rambled about the mouldering walls, with that deep interest which they who explore these ancient ruins always feel, and which those who read cold and labored descriptions of their towers and jutting angles, and gates, and massy walls, can rarely even imagine. The most remarkable curiosity is a well 300 feet deep, into which a lighted candle is lowered, until its receding blaze seems to diminish and twinkle in the black and viewless depth, like a solitary star in a dark firmament. I threw a stone into this well, to mark its prolonged period of descent, before the faint echo of the deeply resounding splash returned to the ear from the surface of the troubled water. The descent did not occupy so long a period as that of the Hindoo Deity in the Rejected Addresses, who

“Nine centuries bounced from cavern to rock,  
And his head as he tumbled went knickety-knock,  
Like a pebble in Carisbrook well.”

To draw water from this deep well, it may readily be supposed, is no easy task. This duty devolved upon an old Jackass, or rather upon one who grew old in the performance of this service. He labored here for about thirty years, until death lately stopped him in his monotonous circuit. This patient animal must have excited the sympathies of all visitors, for he is kindly mentioned by every

traveller who has, within the last quarter of a century, visited Carisbrook.

Cowes, five miles from Newport, is a small town containing only three or four thousand inhabitants. Its name became familiar to American merchants, during the operation of the degrading Orders in Council, when nearly every vessel for an European port was advertised as clearing for "Cowes and a market."

On leaving the Isle of Wight in the steamboat for Southampton, the hills, sloping down to the water's edge, are dotted with several beautiful country seats, half embosomed in the green foliage of trees. Several elegant pleasure yachts, of one or two hundred tons burthen, were lying at anchor in the port. These fast sailing vessels are kept at a great expense by gentlemen, who are as fond of racing on the water as many others are on the land. Crews are maintained to carry the owners out to sea on their pleasure excursions.

After a passage of a couple of hours, we were landed at Southampton, one of the prettiest towns I have seen in England. The windows and piazzas of several of the inns are decorated with flowering shrubs, tastefully arranged in pots, which render the fronts of these inns quite attractive, inviting the traveller to enter, as it were, into bowers that refresh the senses by the bright colors and fragrance of blossoms. Apricots and other fruit we found here abundant and cheap.

During a stroll over the town, we observed a very pretty well dressed white girl walking in one of the principal streets with a negro, upon whose arm she leaned with apparent familiarity. It was stated to me by an English gentleman, that it was no uncommon circumstance for the white women of the lower classes to marry negroes in England, the revolting prejudices against this connexion not being so strong as in the United States. This may



perhaps be attributed to the circumstance that there are very few blacks in England, where a servant of this rare color attracts more attention than a train of a dozen white men in liveries.\*

Soon after being set down from the coach at the inn door at Salisbury, we were on our way to view the celebrated curiosity of Stonehenge, consisting of ranges of great rough stones set up in remote ages of the British Empire by the Druids, and still lifting up on high, in solitary grandeur, their gigantic forms, above the uninhabited desolate Salisbury plains. One naked swell of land rising behind another in apparently endless succession, and covered with a thin green turf, reminds the traveller of the equally green mounds of water on which his eye may have been intently fixed in gazing over the wide expanse of the ocean, after the storm has passed over it. Most of the land remains

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\*A few years ago, a free black man from the United States, in company with the crew of an American ship lying in the port of Cronstadt, visited St. Petersburg to attend a review, by the Emperor Alexander, of some Russian troops. The woolly hair of the African peering above the uncovered heads of the multitude, as the Emperor passed by, attracted universal attention among the inhabitants of that frozen region. The eye of the Emperor was accidentally directed towards it, when, obeying the impulse of his curiosity, he rode up to the sable proprietor, and actually took him into his employment as an attendant, at a liberal salary. With all the proffers of good fare, and of an easy life at a royal court, this black man could not tempt his wife to accompany him to his new residence.—The invitation was declined by her, for the alledged reason that she feared that she might not find agreeable society there. Some of the free blacks in the northern sections of the United States are probably as great sticklers for rank and fashion in their peculiar circles, as the dandies in the higher circles in London, and are equally fond of carrying all the novel fashions of dress to a ridiculous extreme.

Several of the blacks who went as emigrants from New-England to Hayti, to enjoy equal rights and privileges, liberty and equality, returned to the United States as soon as they earned enough to pay their passages, alledging that they found, on their arrival, they could not live without hard work, and that they preferred to work for their old white masters, rather than for new black ones.

unfenced, as a common for sheep pastures ; many a “ Shepherd of Salisbury Plains” still plies his calling here, and is found watching his sheep.

Looking earnestly forward, we soon descried over the green summits of these ridges of waste land the tall blocks of the massy stones of Stonehenge, rising above the edge of the horizon like a clump of clustered cedars, some leaning and others standing erect, with heavy blocks of stone lying horizontally upon their tops. How the ancient inhabitants, with their rude machinery, were able to transport these fragments of rocks from the nearest quarry, seven or eight miles distant, and to lift them up on end, and afterwards, to raise the great blocks, which extend horizontally from summit to summit of each, like a beam that extends horizontally and rests on the tops of erect gate posts, has long puzzled antiquarians. The erection of these great stones on the deserted Salisbury Plains, which renders these Druidical works objects of such intense curiosity, is indeed an unaccountable circumstance. Greater stones than these may readily be lifted in modern times, by the present mechanical engines, and swung dangling in the air by the unyielding iron dovetail of a single lewis, and far heavier ones have been raised by the ancient nations of Asia and Africa. Several of the stones appear leaning, as if ready to fall ; but the lower extremities of the deeply rooted blocks are so far imbedded in the soil that they remain immoveable, and probably will remain so, when the massy temples and palaces of modern workmanship shall have crumbled to ruins.

These Druidical erections are probably the most ancient work of the hands of man which are to be found in England. Indeed, so obscure are the traditionary accounts of them, that there has been much controversy respecting the probable purpose for which they were reared up, as well as concerning the date of their erection. It is evident that

they formed a sort of temple of a circular form, as the stones are arranged in double lines, around a common centre, inclosing an area of about 100 feet in diameter.—The outer circular line of stone posts, which remain standing like sentinels at regular distances asunder, are composed of stones each about 20 feet high above the level of the greensward around their base, six feet broad, and three feet thick, somewhat resembling a rough brick in outlines. The posts forming the inner circular range are only of about one half the magnitude of the outer ones, and are about ten feet from the outer circular range. They might have formed a sort of portico or piazza around the area of the interior circle.

The soil of Salisbury Plains resembles that of the English Downs, already described. On removing a thin turf, you turn up the white barren chalk of the subsoil, tenacious, and nearly as hard as stone. Holes were dug in this chalk for the reception of these posts, and the cavity around them, it is stated, has been found filled with closely rammed flint stones. Supposing each block to be sunk 10 feet beneath the surface and to project 20 feet above it, and to be of the dimensions in breadth and thickness, as above stated, every one of the large stone posts would weigh about 70,000 lbs. The amount of labor in moving and erecting these stones must, after all, have fallen short of that required for heapiug up the great mounds of earth in Ohio by a race perhaps coeval with the builders of Stonehenge. One of these Indian mounds, with its outworks, which I once rambled over on the banks of the Ohio, excited greater astonishment than this monument of the persevering labor of the early Britons.

The wide plain around Stonehenge presents to view a surface broken into artificial mounds and ridges, resembling the half-rounded remains of military breastworks, formed into squares, circles, and parallelograms, and heav-

ing their sod-covered summits two or three feet above the level of the soil. These works are supposed to be the places of interment of a once numerous people, whose graves are almost the only monument of their having existed.

Old Sarum, celebrated in ancient times as a populous city, and in modern times for its having the privilege of representatives in Parliament, attracts the notice of every traveller who visits Stonehenge. This solitary spot, in a solitary region, reminds one of some of the ancient cities of the East, now depopulated and deserted. The old castle and walls are nearly mouldered away to ruins, by the wasting rains and frosts of about 2000 years, and the population is reduced to two or three persons. The town owed its importance to artificial causes, among which may be ranked the expenditure of national funds derived from more fertile portions of the empire. As this resource failed, the population diminished, the soil being too poor to support any considerable number of inhabitants. A couple of brothers remain the sole tenants under the proprietor, who deems the right of controlling their mercenary votes in electing members to represent Old Sarum in Parliament, of more pecuniary worth than the freehold itself of the whole town, without this appendage of the rotten borough system.\* These brothers here meet to elect the members to Parliament whose names are proposed to them by the proprietor. Instances have been known where the voters have given their suffrages in favor of candidates, whose names they never heard until disclosed to

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\*By the Reform Bill brought before Parliament in 1831, it is proposed to disfranchise sixty of the rotten boroughs, and to deprive forty-seven other boroughs of one member each; and to reduce the representation of two others from four to two members—and in the remaining boroughs to withdraw the privilege of returning the members from the corporations and vest it in the householders.



them at the polls, with directions for their compliant votes. In this depopulated part of England, owing to the comparative sterility of its soil, and the rapid increase in population of other more fertile sections, the rotten borough system prevails in its greatest extent.

In the small boroughs, which are not entirely under the control of individual proprietors, the electors offer their votes for sale, as they do their chickens in the market, to the highest bidder. The accounts of the vast sums expended to buy votes and to treat the voters at the public houses, are almost incredible. An American, accustomed to the republican modes of elections, can scarcely imagine that \$300,000, or more have been lavished in bribes, or in debasing temptations to gluttony and drinking. The public inns, and even the stage coaches, are rendered free, at the charge of the candidates, to every elector who wears the ribbon forming his distinctive badge. Where the publicans have no check upon their cupidity, except their own consciences, it may well be supposed that their bills are not of the most moderate kind; and, on settlement, they are commonly cut down freely, as a friend stated to me; or are finally settled by lawsuits, in which both parties, with legal nicety, take care in their pleas and testimony not to lay themselves open to indictments for bribery and corruption. It has, indeed, been alledged as an argument in favor of the close boroughs, like Old Sarum and others, that the proprietors quietly elect their own candidates without the exhibition of the scenes of riot and open bribery, which take place at the hustings of the open boroughs, as they are termed. In the open boroughs, it has become notorious for freemen, if they deserve the name, to sell their votes to the highest bidder; and very little dishonor appears to be attached to this shameless abuse of the most valuable privilege of Englishmen—that

of electing their own rulers.\* The proprietors of these close or rotten boroughs publicly advertise for sale the right to a seat in Parliament as a matter of bargain and sale, and judging from a statement in a respectable English publication, the private voters are frequently no less openly venal and corrupt. "In some of these places, when a candidate arrives, the bellman goes round the town and proclaims the bidding which such candidate proposes to make, and the voters collect around him, and rise and fall in their demands, like buyers at an auction. Bad in principle as these close boroughs are, decency, honesty, and the spirit of liberty are much less offended by them, than by the open boroughs and jobbing corporate towns.—Such is a summary of our popular representation."

#### INQUIRIES ABOUT THE UNITED STATES.

In public stage coaches and inns, inquiries have been frequently addressed to me by the temporary acquaintances there formed, relative to the present state of society and improvements in the useful arts in the United States, concerning which a remarkable degree of ignorance appears to prevail. I was several times asked if there are roads in the United States sufficiently good for stage coaches; and if the houses in America are built or furnished, in any respect, like those of England. Persons having friends or relations who have emigrated to America, have also asked for information about their welfare, with the

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\*It appears from the Report of an examination recently had before a committee of the English government, appointed to investigate charges of bribery and corruption alledged to have been practised at the election at Liverpool, that about fifty dollars, and in some cases, more were regularly paid to each elector after voting. In this election, which was a disgrace to a free and enlightened country like England, a sum estimated at above 300,000 dollars was expended. The proofs were in this instance so palpable, that the successful candidate lost both his seat and his money.

apparent expectation that I must have seen or known them when in the same country, on the other side of the Atlantic. An Irish drover, well dressed and of respectable appearance, once questioned me closely, on accidentally learning that I was from the United States, upon the prospects of an emigrant after his arrival, particularly if he possessed eight or nine hundred pounds in cash, and a tolerable personal appearance and address. He was specially solicitous to learn the probable chances in a matrimonial way for such a person, observing that he had frequently entertained thoughts of going to America.

The United States, as a nation, are not so interesting to the population of England, as England is to the United States. Every work of the fine arts, as well as bale of fine goods imported into the latter country, has long been rendered more estimable, even by the mere name of "London" imprinted on it. The most common, as well as the most costly articles of household furniture used in the United States, were once of English manufacture. An American at the present day, when seated by the domestic fire-side, cannot look around him without noticing numerous objects to remind him of the country to which he is indebted for so many of his private comforts—even for the very tongs or poker with which he adjusts his fire, and the knife and tea cup on his table, the one stamped with the name of an English manufacturer, and the other imprinted with English landscape views, which appear developed to his sight, with castle, and cottage, and palace, as often as he drains his cup to the bottom. Even the humble American cottager lifts an English door latch, whenever he crosses his threshold.

The Englishman, on the contrary, sees no article of American manufactures nor of American production, except agricultural products, and raw materials imported for the supply of the manufactories of his own country. The apparent tardiness of the progress of the Useful Arts in

America has very naturally led Englishmen to suppose, that an equal tardiness prevails in relation to the advancement of the Fine Arts. An English writer has even expressed his contempt of this degrading state of national dependence, by observing, that the Americans import their literature with their bales of European goods.— This, probably, will always be the case with nations strictly agricultural, and therefore commonly poor. The Useful Arts are the handmaids to the Fine Arts. They spring up, flourish, and decline together.

Absorbed by the enjoyment of wealth and luxuries, or by avocations of laborious industry, most individuals of the English nation are careless and indifferent about the state or condition of the people of foreign countries. An Englishman, as a citizen of a most powerful empire, pursues his own individual pleasures and gratifications, looking upon all other nations as secondary in rank and power, as well as in his affections. Many of the common people seem to have come to the conclusion, that England, in supplying the world with useful products of industry, virtually resembles the sun, who pours abroad his universally benignant rays upon every nation of the earth ; even causing the wilderness to blossom as if conscious of his influence ; whilst the great luminary himself seems to remain unconscious of the existence of the wilderness, and even of the remote worlds to which he sends forth his light, as the light of life. An American must thus be prepared to find, among the uneducated or prejudiced portion of the English people, much cold indifference and ignorance in regard to his own country ; but he should beware, on his part, of betraying that asperity or waspishness of feeling, which a coquette sometimes exhibits when she speaks petulently of the character of the lover, whose remissness in addressing little conciliating acts of attention may have been his most offensive sin. Rather let Amer-



ica, like a discreet matron, keep her own household in conspicuous good order, and found her hopes of respectability among nations upon the cultivation of the Arts; and she will not fail to obtain “golden opinions” from foreigners by meriting admiration, rather than by courting it.

#### BATH.

Bath has been called one of the most elegant cities of Europe. It is spread over the sunny side of the slope of a hill nearly four hundred feet high. On approaching the city from the south, the traveller crosses the summit of an adjacent lofty ridge of hills of nearly equal altitude, divided from that upon which the city is located by a deep vale, and by the river Avon, extending through it like a chain of silver, with its sparkling waters reflecting the sunbeams. From this hill top the spectator may look down upon the streets and houses of Bath, and view one roof rising above another, and street above street, in successive stages, exposing to the eye distinctly almost every individual edifice of the city. Beautiful edifices they all are, constructed in every instance of a smoothly cut, cream-colored free stone. Even the humble dwellings of the laborers are constructed of hewn free stone, or rather sawed stone, this species of free stone, or oolite, as it is called by mineralogists, being sufficiently soft, when first taken from the quarry, to be cut into slabs and blocks by a common cross-cut saw, with as much facility as loaf sugar. In several instances, I have observed men employed in sawing off the blocks of stone, the surfaces of which, on exposure to the air, become hard. The uniformly beautiful appearance of this fine building material almost induces the stranger to imagine that Bath contains no humble houses for the poor, when the meanest structure to be seen is faced with smoothly cut stones, laid in courses, like those of the

walls of a palace. All these edifices appeared brightly gilded by the light of the setting sun.

The white walls of the Royal Crescent and of other private dwelling-houses are ornamented in front with little flower gardens, lawns, and shrubbery, inclosed by iron rails. Various creeping vines, such as the honey suckle with its coral clusters, and jessamines with their modest blossoms sprinkled like stars over a sort of firmament of green foliage, appear on a nearer inspection to lend the warm graces of vegetable life to decorate the beautiful sculptured stone pillars, around which they are twined. Clinging to the sides of the walls appears also the Passion flower, flourishing with its roots in the open ground, and a trunk three or four inches in circumference. Indeed, all the external splendor and beautiful decorations, which wealth can command, are bestowed upon these residences, to render them attractive to the fashionable and gay of this pleasure-seeking country.

From the extreme steepness of the declivity of the hill on which Bath is built, it is somewhat dangerous to descend several of the streets in carriages drawn by horses. More tractable animals of the biped race have been substituted in the places of horses, there being above one hundred small hand-carriages licensed like hackney coaches. Several of these vehicles which I have passed in the streets are drawn by two men, harnessed like horses. These little go-carts have three wheels, two on the rear axle, and one in front, with a sort of helm attached to it, by means of which the person seated in the vehicle may in some degree steer, or direct its movement. One can hardly refrain from a smile on witnessing the ludicrous effect produced by the appearance of some old gentleman seated with composure and gravity in one of these little carriages, whilst he is drawn over the flagging, like some pet child indulged by its nurse with an airing in its little wicker

Bath is well known as the most fashionable watering place in England. To accommodate the gay visiters, who resort hither for amusement and dissipation rather than for health, extensive ball-rooms and still more extensive suits of card-rooms are constructed. This city has been celebrated, particularly in novels, as a place for match making ; where the young and the sprightly expose themselves to the snares of the old and calculating, content to take the chances of marriage where money supplies the place of affection, and rank and titles are deemed equivalents for youth and beauty. The candidates for the noose must here slip it on, and hope for the best, whilst they listen to the ominous words of the church service, in which they take helpmates " for better, for worse, for richer, for poorer !"

Although the greater part of the company congregated here pass their time in a round of amusements and dissipation, yet many invalids resort to the hot baths for the improvement of health. The hot springs of Bath are really objects of curiosity, gushing forth as they do from the foot of the hill, and pouring into a large stone tank about twelve or fourteen hogsheads of hot water per hour. This water issues from the ground, of a temperature as high as the hand can endure without being scalded. The natural warmth of the spring-water is about 115 degrees of Fahrenheit, and steaming with vapor, it has flowed thus hot even from the period when the Romans were in possession of the country, and has given a name and importance to the city built up around it. Whence the heat, which has imparted this temperature to so great a quantity of water, is derived, has always been a subject of wonder to mineralogists. It is supposed, however, to originate in some sort of chemical action or decomposition constantly taking place in the bowels of the hill. This phenomenon is not confined to this one spot, as a similar

spring of hot water gushes out of the ground on the bank of the same river in Bristol, fifteen miles distant from Bath.

The great public baths are formed like cellars walled with blocks of hewn stone and provided with steps for convenience of access to the hot water, which is admitted within them to the depth of about four feet. The largest basin, called the King's Bath, is about 60 feet long and 40 broad. Around the edge of the steps are numerous little dressing rooms screened by blinds. In these apartments, the bathers undress, and invest themselves in flannel loose-gowns, the original colors of which appear to have lost all distinctive tints, except that of one uniform dingy yellow. In these dresses and in these public baths those gentlemen and ladies bathe promiscuously, who do not feel disposed to pay the fees for the more comfortable private baths which communicate with, and are constructed near the great public pool. The bathers, when immersed, exhibit only their heads and arms as they splash the water, and enjoy the warmth which it imparts.

In the private baths, the luxury of warm bathing may be enjoyed in the highest perfection. Each bath is formed of spacious dimensions of stone, the water being four feet deep within them. By a short flight of steps, I descended into the hot water from the apartment in which the bath is situated. The natural heat of the water issuing from the ground and flowing into the baths by conduits is regulated at the pleasure of the bather, by the admission of cold water, as in common baths. When the bather is ready to leave the water, he rings a bell, at which signal an attendant immediately appears with a flannel sheet well warmed, which he throws over the shoulders, and applies a warm napkin to dry the hair and other parts of the body. This application soon produces a most grateful perspiration, causing the bather to realize the descriptions of the luxury of the bath, as enjoyed by the inhabitants of the Eastern nations.



The water of these hot springs is also drank in some cases. The pump used to raise the water descends through the pool or basin in which the bathers wash themselves, and also through the paved bottom or floor of it, to the subterranean springs beneath. The Pump Room, as it is called, is situated nearly over this public bath, and the fashionable visiter whilst sipping the tepid water may, without much effort of the imagination, suppose the end of the pump to be terminated in the bath in which it is immersed ; and that the same water is drawn up through the pump to be used internally by one set of patients, after being externally applied by another. The public room in which this spring water is distributed, like soda water from a fount, is the place of fashionable resort during a portion of the morning. The statue of Nash, celebrated in the annals of gallantry in this city about seventy years ago, is still to be seen in this room, where he so conspicuously acted his part as to gain the name of *Beau Nash*.

We took a post chaise to Bradford, a small town about eight miles distant from Bath, and also situated on the Avon. This river serves to supply the water to some few manufactories ; but the power derived from this uncertain river is so irregular, that steam engines are employed to operate the machinery, during a considerable part of the year. One of the largest woollen mills which we visited appeared to be filled with machinery remaining idle.—The proprietor said that the present state of this branch of manufacture offered no inducement for making cloth. At Trowbridge, another similar manufactory appeared to be indifferently managed, and the machinery to be inferior, generally, to that employed in Leeds.

In Bath, the English language is spoken with propriety ; whilst in some of the adjacent villages, only ten or twelve miles distant, your ears are saluted by a dialect, as unintelligible as that of Yorkshire. At the close of a fine day,

whilst I stood on the bridge gazing at the flowing waters of the rivulet, I listened with attention to the conversation of some of the laborers from the adjacent mills, who were strolling there to refresh themselves, after the labors of the day were terminated. Scarcely an intelligible English accent or word reached my ear to convince me that I was, in the land of Burke and of Addison.

The English language is pronounced by the inhabitants of the widely distant borders of the United States, with more uniformity than it is in England by most of the inhabitants of even the same county. In many parts of the inland districts of the United States, a peculiar nasal twang may, it is true, be observed in the accentuation of words; particularly among the few illiterate free persons to be found in that republic, who can neither read nor write. It was this peculiar slang which Mr. Mathews, as a "travelling mimic," took so much pains to copy and burlesque; but the "school-master is abroad," and every successive year these peculiarities of the national tongue are diminishing.\* From the scanty means of instruction af-

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\*Many words which are used with propriety in the United States, are not recognised in England. These have in many instances originated from the defective nomenclature of the Old World, when applied to designate all the novel and peculiar customs and systems of the New World, originating in the very nature of the free institutions of government and of religion, unknown in the country from whence, as the original source, the English language has been diffused over the broadest and fairest portions of the civilized world.

Among the peculiarities in the application of terms, an English lady observed to me that the Americans frequently apply the term, handsome, to trees and houses, and other similar objects, as well as to persons, to whom this word is more distinctively applied in England. The term clever, too, has in the United States another and a broader meaning than that which is inferred from the same word on this side of the Atlantic, where it imports skilfulness and manual dexterity rather than a kind and obliging disposition. Although it cannot with propriety be alledged as a fault, on general principles, for one nation to differ and depart from another, in the application of the terms of a common language, par-

forded to most of the laborers in England, where no general system of free schools offers facilities for the acquisition of the rudiments of knowledge, one generation transmits to another the same peculiarities of pronunciation and diction, and even of dress. The Yorkshire laborer is shod probably with the same heavy shoe, studded on the sole with the iron heads of projecting hob nails, which his forefathers centuries ago were accustomed to wear. Drab Corduroy breeches, with the never-failing gaiters of sheepskin, complete the covering of the nether limbs. The laborers on the farms are invested to the chin with a brown linen frock, above which they exhibit a good natured rotund face, sometimes as unmeaning in expression as a pumpkin on a haycock.

From Bradford we took a post chaise to Frome, a flourishing town containing about 13,000 inhabitants. Not being provided with letters to any one in this place, we called on one of the principal manufacturers of broadcloth in this quarter of England. Introducing ourselves as Americans, desirous of viewing his extensive works, he very politely accompanied us to his manufactory, about a mile distant from the town. The mill is situated upon a brook which at first served to turn the small mill wheel, when improvements in machinery moved by water power and applied to the manufacture of wool, were in their infancy. This brook now furnishes but little more water in summer than is necessary to wash the wool and cloths; and two large steam engines have been constructed to move the machinery. The processes of manufacture appeared to

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ticularly when widely severed from each other, and distinct in many of their habits as well as in their forms of government, yet a uniformity in all respects as far as practicable, is desirable, that the inhabitants of both countries may mutually understand and enjoy the works of their best writers,

be managed here upon a very perfect, but more expensive and laborious plan than that practised in Yorkshire.

The distance from Bath to Bristol is about a dozen miles by a fine level road laid out along the banks of the little river Avon, upon the mouth of which Bristol also is situated. On our way, the spot was pointed out to us where the excavations of a coal mine are extended, in various branches, directly beneath the bed of the river. This facility of working the drifts of coal mines in England to great depths, without experiencing much inconvenience from the intrusion of water, is attributable to the tenacious, compact, clayey soil, which forms a superstratum almost impervious to water, like the roof of a house. When the rains descend, the trickling currents flow off from the surface of the ground into the rills, and swell the rivers, suddenly producing freshes, which almost as suddenly subside. This circumstance renders the water power in England generally fluctuating and uncertain, and of comparatively less value than the more certain, controllable steam power. In the primitive granite ranges of the greater portion of New-England, the soil is of a sandy and loamy, rather than of a clayey texture, and the rain which falls upon the hills is readily absorbed, and during the summer droughts, is given out again gradually by unfailing springs, that gush forth. These effectually prevent deep excavations in the earth by an inundation.

At the small village of Keynsham, we stopped a few hours to view the fields of woad, to ascertain the mode of cultivating this plant, and the processes necessary for preparing it for the use of the dyer. Woad is a vegetable which in appearance resembles the cabbage. It is cultivated in drills, like turnips. The leaves are plucked about three times during the season, by women, who were here also performing the labor of hoeing the crops. I counted



18 women thus occupied in one field. One of them told me she earned only 8d per day, or 15 cents. They appeared, however, to be mostly feeble old women, whose labor could not be very effective. The tender leaves when stripped from the plant are conveyed to a machine for grinding them, resembling in arrangement the rolling stones of a bark mill. In the place of the stones, however, there are heavy circular wooden wheels or cylinders set around with knives, or iron bars with sharp edges, to mince up the plants over which they are rolled in a circular trough by the labor of a horse. A soft juicy pulp is the result of the operation. The whole mass in this plastic state is moulded into balls of the shape and size of a pear, and the exuberant juices which drain off are recieved into a tub, to be used for moistening such portions of the pulpy mass as may have become too dry. The balls of woad are placed upon shelves made of twigs or hurdles arranged beneath an open shed. After being thus dried, they are laid in store until October, when the last process of fermenting the woad, to prepare it for market, is completed. Unless deferred until cool weather, the fermentation which takes place becomes excessive, and injurious to the quality of the dye.

The process of fermenting or curing the plant is termed *couching*. The dry balls, being crushed and moistened with water, are spread over the stone floor of a cellar, forming a mass of the uniform depth of about 12 or 15 inches. A fermentation shortly takes place, and the mass is worked over with shovels, until it becomes putrid and exhales a most fetid odor, which taints the air for miles around, like the effluvia of foul slaughter-houses. In the days of Elizabeth, that imperious old queen, one of these woad establishments was erected in the neighborhood of a royal palace. As soon as she obtained scent of their employment, she caused the workmen forthwith to transfer their

labors to a more respectful distance. The process of curing the woad is termed couching, from the supposed resemblance of the form of the fermenting heaps to beds or couches. The whole mass is turned over by the workmen once a day for the first fortnight, and once every other day, for a week or two longer, when the heat of the fermentation subsides, as well as the disagreeable effluvia, and the substance has a tenacious consistency. When it is of the best quality, on being broken or separated it shows filaments, like those of a spider's thread, extending between the pieces severed from each other.

Woad was originally used for dyeing blue, before the use of indigo was introduced into Europe, and is still used in great quantities with indigo to prepare the dyeing liquor. As a singular evidence of the power of ancient habits and prejudices over the best judgments, it is stated, that when indigo was first introduced as a substitute for woad into one of the countries of Europe, the use of it was prohibited. In the prohibitory ordinance, indigo was harshly called "the accursed drug." The price varies according to the productiveness of the seasons, from 15 to 30 pounds sterling per ton, and the crop for an acre also varies for the same seasons, from one to two tons to the acre.

On approaching Bristol, the conical domes of the numerous glass-houses, and the lofty bluffs which overhang the borders of the Avon, form conspicuous objects. The river, at ebb tide, appears to shrink to a scanty brook, creeping through a bare bed of mud. Immediately after flowing through the town of Bristol, it passes between overhanging precipices of rocks, above 300 feet high.—On the summits of these rocks are favorite walks of the population of Bristol, and from their base issue the famous springs of hot water, called the "Bristol hot wells." The heat and qualities of the waters are similar to those of the Bath waters, already described.

The navigator may well imagine the difficulties of an intricate navigation in a gulph, between cliffs 300 feet above the surface of the river, where his sails are frequently agitated by baffling, eddying winds; and where his keel may plough the mud, should the retreating water desert him before he has entered the gates of the wet docks. The rush of the tides in their daily flux and reflux is extremely rapid, as they rise and fall about 36 feet. A gentleman of Bristol stated to me that he once witnessed the complete destruction of a ship deeply laden with a heavy cargo, in consequence of the tide, which swung her around across the channel. Her strained framework yielded to the weight of the cargo in the hold, as it rested upon the bare uneven bed of the river, and a gallant ship became in a few hours a misshapen wreck.

The docks for preserving the vessels afloat at all times of the tide, occupy the channel of the Avon, and afford improved facilities for discharging the cargoes of ships. The difficulties overcome in the construction of the Bristol docks may be imagined from their cost, which exceeded 3,000,000 dollars.

A larger proportion of the American trade once centred in Bristol, than was carried on with all the other parts of England; but it has been of late years almost entirely diverted to Liverpool. Superior facilities are now offered by the port of Liverpool, from its intimate connexion, by means of navigable canals, with inexhaustible mines of salt and coal, as well as with many manufacturing towns situated in the interior of England, which always yield a return freight to every ship that takes a cargo to that great commercial emporium.

It was from Bristol that the eloquent Burke was elected member of Parliament. Consulting his own judgment in preference to that of his constituents, in his appeals to the British nation in relation to the revolted colonies of Amer-

ica, he was rejected by his constituents, and was superseded by a candidate of humble pretensions. His prophetic voice warned the opponents of conciliatory measures, not only of the existing power, but of the future greatness of America. His arguments were addressed in vain to those who, through all grades of business, from the English hat maker to him who drew the waxed end for a shoe, considered the right of deriving a profit from the Americans, both by direct taxation and restrictions on trade, as a part of their private property, and as a source of certain income. The government itself, following the impulse of individual feeling, with all the keenness of self-interest, considered that they had the right, both to derive revenue from America, and to tax her in all cases whatsoever; and moreover, the power to enforce their supposed right. This individual feeling has been transmitted from father to son, in the succession to a family trade or business; as a Londoner deems he has a property in those customers who may have been in the habit of resorting to him to buy their tea or their cloth. This right of serving old customers he sells to his successor, under the name of "the good will of the shop." It is with similar feelings that a very few of the manufacturers and traders of England, interested in the export of manufactures to the United States, still view the introduction of every new manufacture and of every new source of home supply, which renders the Americans independent of England, as a sort of curtailment of their profits and of their property. For this loss of customers, without even the benefit of receiving the pieces of silver as an equivalent, as on surrendering the good will of the shop, a jealousy and irritation, bordering on personal animosity, is inconsiderately felt, and even sometimes expressed, toward those who are innocent competitors in manufactures beyond the distant shores of the Atlantic.



It is due to the generous spirit of the English manufacturers, here to state, that, during my rambles over the various manufacturing districts of England, I have only in two or three instances met with repulses, although making myself known as an American ; on the contrary, I have experienced from the most respectable of them much civility and kind attention.

If any bitterness of disappointed avarice and of selfish calculation exist, it must pass away, and be forgotten in the various new pursuits and branches of business, that the ever-changing states of society are constantly creating.—Until the present aristocratic form of the English Government becomes assimilated to a form of government more like that of the American Republic, the feelings and sympathies of Americans,—brethren descended from the same stock, and speaking a common language,—can never become truly congenial with those of the higher classes in England, and “claim kindred there, and have their claims allowed.”

After a short stroll over the town, we left Bristol on our return to Bath ; and from thence took seats in the coach for Stroud, about forty miles distant. In order to view with despatch some of the principal woollen mills in the vicinity, on the river called Stroud Water, we lodged at a small inn, in the neighborhood of the manufactories. Several of the little green vallies we passed appeared as if brightened by a blaze of fire with the scarlet cloths spread out to dry.

Following the course of the river Stroud, a fine little stream which turns several mill wheels in its course, we came first to a large new stone mill, about two hundred feet in length, which, although erected several years, has never been filled with machinery. After the cast iron water wheels had been set up, the proprietor, as we were informed, found that he could not divert the water for the use of his mill, without purchasing the water right of the

owner of an adjacent meadow. Having neglected to secure this privilege in the first instance, and difficulties in the way of settlement having subsequently occurred, the whole capital invested remained unimproved for several years, until the present season, when the premises having been sold, a fresh company are completing the works. A great number of laborers appeared engaged in removing the earth in wheel-barrows from the surface of about an acre and an half of the meadow, apparently for no other purpose than to create a small mill pond to serve as a reservoir. Without this advantage, the mill dependent entirely on the stream, must cease operation in time of droughts, as soon as the water-gate of the mill above is closed ; and it cannot recommence operation until the moment the liberated stream has been allowed to resume its course. The expense here incurred for this object seems to demonstrate how valuable a capacious mill pond is considered in England, when the very earth is scooped out and removed to form one. To improve this small stream to the best advantage, four iron water wheels, each about thirteen feet long and as many feet in diameter, have been constructed in this single mill. With an attentive consideration to the saving of power, the gudgeons or axles are made to revolve upon friction rollers, to prevent the resistance to its motion arising from friction.

About a mile below this establishment, we visited a range of fine large brick mills, called the Stanley Mills. Here some of the finest broadcloths fabricated in England are manufactured. The various buildings are all enclosed by a substantial brick wall, ten or twelve feet high. A porter, as usual, occupies a lodge at the entrance. One of the proprietors, to whom we introduced ourselves as Americans, without hesitation conducted us over his works, showing us in detail the various apartments con-

taining the machinery, as well as the finest specimens of the goods produced by it.

On entering the basement of the mill, the spectator is surprised by the view of five cast iron water wheels, some with hollow shafts to increase the strength with a small expense of metal. All the multiplied wheels of the mill-gearing connected with them, appear in plain sight, revolving rapidly beneath tasteful arches, and beams of solid cast iron.

Although there are five large cast iron water wheels at this place, yet so small and inadequate is the supply of water, that the proprietor observed to us, he was doubtful whether some one of the water wheels might not be actually turned by the aid of the steam engine of forty horse power, which he showed to us in full operation in an adjacent engine house. The naked iron shaft appears swiftly revolving to transmit the moving power from the steam engine to the main gearing in the immediate vicinity of the water wheels. It seems that water power, wherever found, is highly valued in England; but from the inadequate supply of waterfalls in this country to operate the enlarged mills required at the present day to manufacture with all the advantages accruing from extensive machinery and due subdivisions of labor, &c. the additional power of steam engines has been resorted to. These serve as coadjutors to the water wheels, and lend their friendly labor whenever the necessary supply of water fails. This manufactory is constructed in a substantial manner and is even ornamental to the beautiful valley of Stroud-Water. The sloping hill-sides of each bank of the river are sprinkled with country seats, and a navigable canal follows the course of the river, as an accompanying vein to return the products of a healthy arterial circulation, which the never-ceasing flow of the adjacent river contributes to elaborate and perfect.

From a comparative examination of the state of the woolen manufactures of Leeds and of the West of England, it appears, that in Leeds, the most improved machines and ready skill are successfully employed in producing cheap and showy, light broadcloths, with a polished superficial finish ; whilst in the West of England, more substantial and finer cloths are made by a more costly expenditure of labor.

#### AN ENGLISH ALE-HOUSE.

At a late hour of the day, after taking a stroll about the town of Stroud, we returned to our little inn, or rather ale-house, as it in truth proved to be. The laborers from the adjacent mills were already assembled for their Saturday night's debauch, to spend, in beer and tobacco, the surplus of their wages for the week, after paying over to their wives the amount absolutely necessary for the subsistence of their families.

Desirous of observing the forms and ceremonies of the tap-room of an English ale-house, I entered amid the smoke arising from numerous tobacco pipes. Objects were scarcely discernible through the dusky twilight within the apartment ; but the confused sounds of numerous voices, and bursts of loud unmeaning laughter reached the ear. Here and there were observable, through the cloud of suffocating smoke, the bright specks of fire glowing in the little craters of the pipes, and brightening and becoming dim at every breath of the smokers, like the flashing light emitted by the fire-flies, scattered over the surface of a meadow, at the approach of evening. This irritating smoke exacts from the eyes a few tributary tears, some of which, as a penalty for entering the tap-room of a genuine English ale-house, continued to trickle down my cheeks even after I had become quietly seated at a table. A mug



of beer was forthwith placed before me to prevent my appearance, as an idle spectator, from interrupting the ordinary routine of the scene. Seated on a bench, with a table composed of a long white board before him, one may here wonder at the copious draughts imbibed by this beer-drinking people. Each individual does not drink off a single mug of beer, merely to slake a transient sensation of thirst, and then desist from his potations, but he continues to pursue a persevering, business-like method of toping, until he feels a delirious excitement, which usually results from the excessive draughts of intoxicating liquors. Arranged side by side in rows on the benches at these long tables, with Boniface in the midst, they order mug after mug of beer, and he speedily brings them forward from the cellar, capped with white froth and arranged on a tray or waiter, supported in one hand, whilst long stemmed tobacco pipes, as white as the froth of the beer, are also arranged on a tray in the other hand. These he disposes upon the board in proper order before each of his guests. After the contents of the mugs are quaffed, others are continually brought on by the attentive and officious landlord. All these seem to have no more effect in quenching their unnatural thirst, than the emptying of fire buckets on a conflagration.

Here the laborer remains sitting and sipping, now taking a few whiffs from his pipe to allow the heat and irritating smoke to act upon his mouth and throat to create a fever or inflammation of the fauces. This produces an artificial thirst, to allay which, he gulps down fresh floods of cool beer. It thus is a work of time for these beer drinkers to become absolutely intoxicated, for it is only by persevering applications to their replenished mugs and to the renewed fires of narcotic tobacco, that they are enabled to swallow a sufficient quantity of beer to produce the desired effect.

I remained at my post for some time, in expectation of witnessing the introduction of the last mug with its overflowing snowy cap, but was finally obliged to retreat in despair. Their mugs were again and again replenished, and were exhausted with apparently unabated relish of every drop. Withdrawing to my small chamber, which was located directly above the tap-room, their songs, meted out with responsive choruses, and followed by roaring cheers and approving plaudits, continued to reach my drowsy ears until past midnight, startling my slumbers, and interrupting my dreams.

One of these laborers, after thus indulging in a night of debauch, is rendered drowsy and stupid for the succeeding day, and hardly recovers the tone of his nervous system till Monday or Tuesday morning, when he recommences the labors of the week. On the intermediate days, the laborers resort to the ale-house, and those who are termed sots, make it their home every evening.

During a short sojourn, one morning, in a small inn at Beckington, whilst I was awaiting the departure of a mail coach, the wife of a weaver came into the public tap-room, with a female companion. They seated themselves on one of the benches, apparently for the purpose of resting themselves, after a fatiguing walk. The array of empty beer-pots upon an uncleaned table drew them naturally into conversation concerning the visits paid by their respective hushands to the ale-house. One of the women possessed a youthful and interesting appearance, and manners which were modest and attractive. Whilst my eyes were fixed upon the newspaper, which forms an appendage to every ale-house, and which, as in the days of Goldsmith, is often older than the ale that is served around, I listened to the conversation which took place. She described her feelings of loneliness during the long winter evenings, whilst her husband was absent at the ale-house. So art-

less and faithful did her narration appear, that I noted it down nearly in the very words she used.

She observed, "My husband is a very contented sort of man, and does not care much about drinking when he has no money. But whenever he has a little on hand, he always seems restless and unquiet, until it is all gone. I always make it a point to take a part of his wages, whenever he settles with his employers; but after he has spent his part of it, I generally find it out by his coming to me very politely, and inviting me to go with him to take a little ale. I used to go often with him for the sake of keeping him company, as I naturally liked to be with him—Although I only just taste of the ale, and leave the rest for him, yet I once drank more than I meant to have done; and was mortified that my husband had to lead me home. Of late I have pretty much done going to the ale-house, but my husband still continues to pass his evenings there, and comes to me oftener and oftener for his money. Mary, says he, will you just step with me to take a drop of beer, which is a genteel way, you know, of asking me for the money; and I cannot find it in my heart to refuse him, when I think how hard he has labored to earn it,"

This short conversation may probably serve as a sample of the domestic habits of vast numbers of laborers in England.

The vice of tippling is evidently more generally prevalent in England than in the United States. From the peculiar compounds of the beer, of which a great quantity must be swallowed to produce inebriating effects, the habit of frequenting ale-houses is attended with pernicious effects upon health, and morals. During the time spent in midnight revels with dissolute companions at the pot-house, the sleeping wife and helpless children are left neglected. In the United States, a man is considered as lost to all sense of shame, and his society is abandoned by

all his considerate acquaintance, whenever he continues to resort openly to the tavern, and to pass his time there in drinking to excess. Although the American toper may drink an equal quantity of intoxicating alcohol with the professed beer drinker of an English ale-house, yet taking it as he does in the state of distilled spirits, he swallows a hasty draught. He commonly slinks into some dram-shop, where behind a screen, or in an obscure corner, usually prepared for secrecy and expedition, he takes his glass as privately as possible. This done, he carefully wipes his mouth, perhaps with his sleeve, and sallies forth, emboldened to court observation in the broad daylight. The beer-drinker, on the contrary, usually requires half a day to get drunk upon his more diluted potation, and then his shameless condition is veiled by the approaching darkness. In some manufacturing districts, the laborer actually leaves the workshop to go to the ale-house at 4 o'clock, "for drink," as it is termed, and the women get tea or other drink at the same time.

Although beer drinking is so generally prevalent throughout England, that 130,000 persons, as is stated, are engaged in the manufacture and vending of it, yet the vice of gin-drinking has also become common. The following account, extracted from the Manchester Guardian, will enable the reader to form an imperfect estimate of the prevalence of this vice also.

"At a public meeting holden in Manchester, an individual stated, that on eight successive Saturday evenings he had counted the number of persons who entered one dram-shop, between the hours of 7 and 10 o'clock, and made the average 412 per hour. He estimated that the total number of persons who entered that one dram-shop every Saturday afternoon and evening to exceed 2500!"

The English laborer, whilst he smokes his pipe and drinks his beer at the ale-house in company with his wife



or associates, appears to be perfectly contented with his situation, and particularly with this state of blissful enjoyment, without looking forward to greater happiness, or distinction in society. From their extremely limited education, they seem aware that advancement to a higher station, than that which they fill, can with the utmost difficulty be attained, surrounded as they are by competitors struggling for their daily bread.

English emigrants are heard to exclaim, after being a short time in the United States, that their fellow-workmen, the Americans, do not take any pleasure;—meaning by this expression, that the American mechanics do not hold festive meetings, or participate in the carousals at public houses, which these foreigners have been accustomed to indulge in before they left the Old Country, as England is frequently termed in the United States. In these carousals they continue to indulge, after they have become settled in their newly adopted country. The Scottish emigrants in the United States commonly display better examples of temperate and industrious habits.

Under the operation of the peculiarly free institutions of the American republic, and of the general system of diffusing knowledge by means of free schools, there appears to be a buoyancy of feeling in the American laborer which sustains him, amid his severest privations and efforts, with cheering prospects of success in his calling. He knows that the path to wealth in the broad field of adventure is open before him; and that with talents aided by industry and enterprise, even the highest honors of his country are attainable. This was the case with Franklin and many other distinguished Americans. A hope of advancement is thus found to exist amongst all ranks of working men, and all in the United States are more or less such. Those only may be said to be depressed beyond hope, who are debased by intemperance,—the great cause of most of the

wretchedness that the traveller witnesses in the United States.\*

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\*There never was exhibited, perhaps, an instance of a greater moral effort made by the people of a whole nation, than has taken place throughout the United States, for the purpose of counteracting and diminishing the fatal habits of intemperance in the use of ardent spirits. In the course of only a few years, the consumption of spirituous liquors has been diminished nearly one half, and the Temperance Societies have registered on their subscription lists, with all the formalities of a public pledge, the names of about eight hundred thousand individuals.

Temperance Societies have lately been introduced with the most happy results into the manufacturing districts of England, and great numbers of workmen have become members, convinced by the powerful appeals to their good sense circulated in numerous tracts and addresses published by various philanthropic individuals.

Under the administration of the Duke of Wellington, a repeal of the duties on beer to the annual amount of above £3,000,000! (<sup>£</sup>14,000,000!) was effected. The floodgates, which in some measure stayed the destroying inundation, were thus broken down. A deluge of beer, beer, is now spread over the land, to increase the evil of drunkenness. It is in vain to assert that strong beer and porter, as consumed by the mechanics and laboring classes in England, form a beverage healthful and necessary to brace their sinews for toil. It is evident that these liquors are consumed as a substitute for ardent spirits, and are often taken by pints at successive draughts, for the sake of the stimulating alcohol which the fermented decoction contains. Dr. Franklin, whilst a journeyman printer in London, exhibited by an actual experiment one of those plain practical illustrations of the moral and physical effects of water-drinking upon himself, and of beer-drinking upon his fellow-workmen, which carries conviction to every mind.

The actual loss to the British nation in the time thus wasted, by the laboring portions of the population, is incalculable. When any branch of business becomes peculiarly brisk, and the mechanics engaged in it obtain increased wages, the regular operations of production are often exceedingly impeded by the more frequent absence and increased debauches of the workmen. Even in the workshops of London, this evil occurs to such a degree, that the proprietor, or master-workman can make no certain calculations upon his ability to accomplish jobs of work by a specified time.

The repeal of the beer tax, under the specious pretext of relieving the poor of the burthen of taxes, was probably intended for political effect, to soothe and influence the countless thousands of ale-house politicians, who in the elated feelings of the moment, it is to be supposed, would naturally

The old Cathedral of Gloucester, where we passed a few hours, is regarded as an object of curiosity merely from its remarkable antiquity, the walls having withstood the storms of 800 years. The town is pleasantly situated, and affords some agreeable walks.

## BERKLEY CANAL.

A canal extends from Berkley to Gloucester, sufficiently spacious for the passage of large ships from the ocean.—It has the extraordinary depth of 18 feet of water, and rivals in magnitude, although not in length, the celebrated Dutch canal from the Helder to Amsterdam. Like most of the English canals, it has proved unproductive to the stockholders.

## CHELTENHAM.

After a ride of nine miles, over a fine road, we alighted at Cheltenham, at the expiration of an hour from the time

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hail with rapture the Statesman, instrumental in promoting their pleasures. It was intended by him, perhaps, like the extra allowance of grog served out to his soldiers, or to a restless ship's crew, to quiet complaints, and to serve as a sort of compensation for their sufferings—a plan which is still pursued in many branches of business, without a thought of the consequences of making the very temptation to vicious excesses the reward of meritorious services and exertions. On the day the Act for the repeal of the beer tax took effect, myriads of freshly painted sign boards were displayed throughout England. But whilst the miserably poor were thus allowed to besot themselves, and to drown their cares in the cup, the middling classes, unsatisfied in their demands for Reform by this partial relief from taxation, have become rather emboldened and encouraged by it, to persevere in the attempt to correct abuses in church and state. Many intelligent individuals have supposed that the Duke of Wellington has thus been instrumental in causing great injury to the best interests of his country; and unless his measures be counteracted by the labors of Temperance Societies, it may hereafter be difficult to decide whether as a statesman in the cabinet, he has not led more of his countrymen to destruction, than as a warrior in the field.

we took our seats. Cheltenham is noted as one of the most fashionable watering places in England. The fashionable season for visiting this place commences in May, and continues till October. That Cheltenham is the resort of fashionable visitors is abundantly evident from the display of numerous coaches and carriages of every description, and from the multitudes of well dressed people who are all in motion on a pleasant morning. Unlike Saratoga, the fashionable watering place of the United States, there are at Cheltenham fine shady walks and a beautiful country to tempt invalids abroad for the enjoyment of exercise. Around Saratoga no pleasing prospects relieve the eye of the stranger, or recompense him for the labor of toiling to the summits of sandy hills. The spring water is here excessively salt, in this respect resembling that of the Congress Spring at Saratoga ; but there is here wanting that abundance of fixed air, or carbonic acid gas, which imparts to the Saratoga water its sparkling appearance, and its extreme pungency of taste.

The following analysis of the waters of Cheltenham and Leamington is copied from a late publication on this subject.

	Cheltenham.	Leamington.
Sulphate of Soda,	grains 10	grains 20
Magnesia,	" 12	" —
Muriate of Soda (table Salt)	" 28	" 54
Muriate of Magnesia,	" 5	" 6
Muriate of Lime,	" 5	" 0
Sulphate of Lime,	" 11	" 17
Carbonate of Iron,	" 1	" 1

It is probably not so much the medicinal qualities of spring waters, which improve the health of the individuals who resort to them, as the salutary change of air and exercise, and enlivening society. There are, indeed, half a



score of the gay and the fashionable to be seen here, to one pallid emaciated invalid.\*

#### WORCESTER.

Worcester is a pleasantly situated town, containing about 20,000 inhabitants. In an account descriptive of the place, it is stated that 20,000 bags of hops have been

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\*The following sketch will afford an amusing outline of the "end and aim" for which these fashionable watering places are visited in England, and may be considered as in a degree applicable to the meridian of the United States.

"The liver has now become the fashion. Liver complaints, bilious, bile, are become the fashionable phraseology. The "nerves" have for a considerable period been forgotten in favor of the stomach; but now the stomach is no more heard of than if it had been a mere hand-maid to the liver. Pie crust and malt liquor continue in disgrace, and calomel and salts are triumphant. No sooner had calomel taken the lead in fashion, than every man and woman began to apply the pressure of their fingers to ascertain if any sensation of soreness could be experienced from a squeeze upon the region of the liver, and to examine their tongues by a looking-glass. Even blooming seventeen scrupled not to tell her lover that she was "bilious this morning," and began to ride jackasses to joggle the liver,—and Cheltenham became a city of circulating libraries and raffles, and parades and pump rooms, and cockneys and idleness. The fashion of "nervous disorders" never cost half the money. The existence of the nerves was somewhat obscure and metaphysical; but the liver was a real sensible organ, as any one might see in a *pate de perigeaux*, or under the left wing of a roasted chicken. It was an indisputable fact, that when the ball was over and the rouge wiped off, there was a yellow tinge in the complexion, which could be nothing but bile. The apothecary or physician following the fashion, advises for Cheltenham, Bath, Leamington or Brighton—or any where else that is in fashion. The excellent house in one of the fine squares is deserted for dirty lodgings at one of these watering places; the children are sent to a preparatory school, or to a cobbler's wife to nurse. The husband must console himself at home with upholsterers' rubbish and naked floors, and a woman to look after the house; and abroad with his office or business. The money that is not spent in lodgings goes in jackasses and raffles; and habits of idleness, folly, and dissipation are produced, which are more incurable than the disorders to remedy which a resort is had to these watering places."

sold here in one year. It is not favorably situated for manufactures, there being no coal mines in the vicinity. The price of coals is enhanced, by the expenses of transportation, to four or five dollars a ton. Worcester is consequently rather an agricultural than a manufacturing district.

#### PORCELAIN MANUFACTORY.

I visited some potteries in Worcester, where most beautiful porcelain is made, almost rivalling, in the pure white delicate texture of the materials, as well as in the richness of the painting, the porcelain of France. Having been conducted with much civility through the various departments of the works, from the pulverisation of the feldspar, and the kneading of the clay, to the packing of the finished ware, all of the several processes were explained successively to me.

Porcelain vases and utensils, of the most delicate proportions, are first rudely formed upon an ordinary potter's wheel, like common earthen ware, and are then dried.—These roughly fashioned vessels of dried clay are then put into a sort of turning lathe, and pared down to the desired form by means of a chisel, as in the process of turning wooden bowls. This plan is pursued in making tea cups and saucers, plates and all the sorts of ware of a circular form; but for impressing upon the plastic clay square, oval and other irregular forms, with raised borders or figures, moulds are employed, into which the clay is forcibly thrust. After the labor of turning or moulding the clay is completed, the fragile newly formed vessels are carefully placed in the kiln, where they are exposed to the action of the fire until they become partially baked and hardened. In this state, the pieces are called biscuit. The degrees of heat in these kilns are accurately determined

by a Pyrometer, an instrument invented by Wedgewood, the great author of the improvements in this branch of manufacture in England. The principle upon which these Pyrometers are found to designate extreme degrees of heat, which would melt the glass of common thermometers, is the well known contractibility of clay ;—this material shrinking in bulk quite regularly, by exposure to intense heat. The contraction of the pieces of clay prepared for this purpose, after being exposed to great heat, is ascertained by slipping them between two straight pieces of brass fixed upon a plate, having two of the ends nearer to each other than the opposite extremities. In proportion as the heat becomes more intense, the contraction of the clay becomes more evident from their sliding further in between the converging sides of the brass gauge, which is marked with the suitable scale of degrees to indicate the heat to which the clay has been exposed.

After the ware has been partially baked, it becomes sonorous, and is in a proper state to receive the application of the paint brush. The operation of painting is a work requiring great skill and nicety. Many female artists are here seated at the tables, applying with their brushes various mineral preparations to produce the desired colors. These mineral compounds have not, when originally applied, the tints of color which they finally assume after being exposed to the action of fire. The colors are materially changed during the burning, as the color of common bricks is altered by the fire to a bright red. These compounds, to produce the colors, it may well be supposed, must be such as both to acquire the desired shade by the application of heat, and also to resist its intense action in the kilns, where the ware is a second time exposed to be semivitrified on its surface, or glazed. In this process, great care is required to regulate the heat by the Pyrometer ; otherwise the whole mass of ware may become partially melt-

ed or destroyed. As you stand by the side of the persons engaged in painting landscapes and figures on the porcelain biscuit, you can see no picture or shade that, in the varied hues and blended colors, resembles the same patterns or designs after being withdrawn from the kiln. The porcelain painter must not only possess the ordinary skill of a limner, but must also have a knowledge of the effect of fire on his colors ; which he applies, with a prescience of what they will become, without reference to the present shades which they produce. A sort of gray compound finally produces a yellow or orange, and a brown mixture yields at last a deep violet and purple. Cobalt, which produces a beautiful blue, is a costly metallic oxide, the price being here six or eight dollars a pound. The oxides of gold, silver, antimony, copper, and iron, are all severally employed. The gold for gilding the ware is applied in the pulverised state, having a dark earthy appearance until the heat revives the metallic lustre. The fire has apparently a magical effect, causing the brightest colors to appear where the most faded daubs of incongruous colors are applied.

The finest paintings are here executed by females, some of whom, it was stated to me, receive very considerable prices for the exertion of their skill and taste.

The mode of printing the irregular unyielding surfaces of earthen ware is both simple and ingenious. The landscapes and other patterns of various sorts are first engraved upon copper plates, in the usual way ; but an adhesive viscid fluid is used instead of the ink. This gummy substance is rubbed into the channels or lines furrowed by the graving tool in the copper plate, the smooth surface of which is then wiped dry. When paper is applied to the surface of the plate, and both are passed between rollers, to make the contact as perfect as possible, the spongy texture of the paper sinks into the lines of the copper,



and absorbs from these cavities all the glutinous fluid, which remains in them, after the plain polished surface of the copper-plate has been wiped clean. The paper, thus impressed with a glutinous substance, is applied by the palm of the hand to the rounded or concave sides of the ware, to which, from its pliability, it readily adapts itself, as to a plain flat surface. The lines of this glutinous substance are absorbed from the paper by the dry baked clay. In this state, the ware is prepared to receive coloring substances, which are first reduced to a dry powder, and are then sprinkled or sifted over the ware. Wherever the glutinous matter has been applied upon the sides of the baked clay, these light impalpable powders will adhere, and when subsequently exposed to the heat of the furnace, they will penetrate into the pores of the ware, wherein it is covered with the vitrified glazing. For common blue printed ware the workmen use the cobalt, ground and prepared like common printer's ink, and it is applied like that ink immediately to the engraved copper plate, instead of the glutinous substance above mentioned. A fair impression of the cobalt ink is struck off upon thin paper. Whilst freshly covered with the undried lines of the ink, this paper is applied to the dry ware, which readily imbibes it after which the paper is rubbed off, leaving the picture distinct upon the surface of the ware. Thus are multiplied expeditiously, the sketches or designs, which before the invention of this process required much expense, and labored skill of the pencil.\*

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\*The manufacture of porcelain has been commenced in the United States, where the texture of the wares produced have been almost unrivalled for compactness, and for a pearl-like delicacy, the materials being found in abundance in the United States of the best quality. Skilful artists are yet wanting to embellish, by tasteful designs, the beautiful vases and utensils which are readily produced by the laborers employed.

The tapering Gothic spires of the churches in England make a conspicuous appearance in many of the landscape views. They are all built of stone, from the foundation to the summit. There is consequently little danger to be apprehended from fire. They have an aspect indicative of age, and strikingly contrasted with the fresh white painted wooden churches of the New-England villages. In the windows of the cottages, and in many of the large brick houses, the leaded sashes and small panes of glass, once in common use, are still retained. The ground floor of many of the common houses, and also of some of the inns, are laid with tiles or flagging stones, which in damp weather condense the moisture, and become wet and uncomfortable.

On the road from Birmingham to Stratford upon Avon, the coach passes beneath an iron trunk of a canal, conducted about 20 feet above the road. This trunk or aqueduct is composed of large flat pieces of cast iron, put together to form a great trough, which resembles, when seen at a short distance, an ordinary bridge with its parapets composing the sides of the trunk to contain the water.

During the season of flowers, girls are to be seen in every town and village, with baskets on their arms, filled with nosegays tastefully arranged with well contrasted colors. These culled bunches of flowers are sold at a halfpenny each. It is a cheap and refined luxury to decorate the mantle and the table, and is one of those simple and beautiful natural ornaments, which a cultivated taste can rarely fail to admire.

#### BIRTH PLACE OF SHAKSPEARE.

Stratford upon Avon derives its celebrity and interest from being the birth place of Shakspeare. Strangers may be seen assembling every day, not only from various parts

of England, but from distant quarters of the world, around an old framed two story building, with the interstices of the blackened timbers filled in with bricks, after the ancient fashion of construction. The house is about 25 or 30 feet long, wedged in closely between two village houses, having leaded sashes. A portion of its front is occupied by a butcher. Before this ordinary house, which would fail to attract a second glance from a passenger in the street, men are seen loitering, to gaze upon it, and stopping to muse as if a palace were exposed to their regards, and piles of rubies, instead of red meat, were delighting their vision. Around the stone in the adjacent church which covers the ashes of Shakspeare, strangers are also constantly gathering.—All this is the passing tribute of admiration and homage which always will be paid to Genius.

From Stratford upon Avon to Moreton, a distance of 21 miles, a rail road is now nearly completed to form a junction with the canal at this place. Great expense appears to have been bestowed in filling up hollows, and in cutting through hills to maintain the proper level, and in the erection of a viaduct of hewn stone of several arches over the Avon.

After travelling through many pleasant villages, I returned to London, with a keen desire to witness yet more of its almost exhaustless store of wonders.







